July 17, 1950

STEEL

The Magazine of Metalworking and Metalproducing

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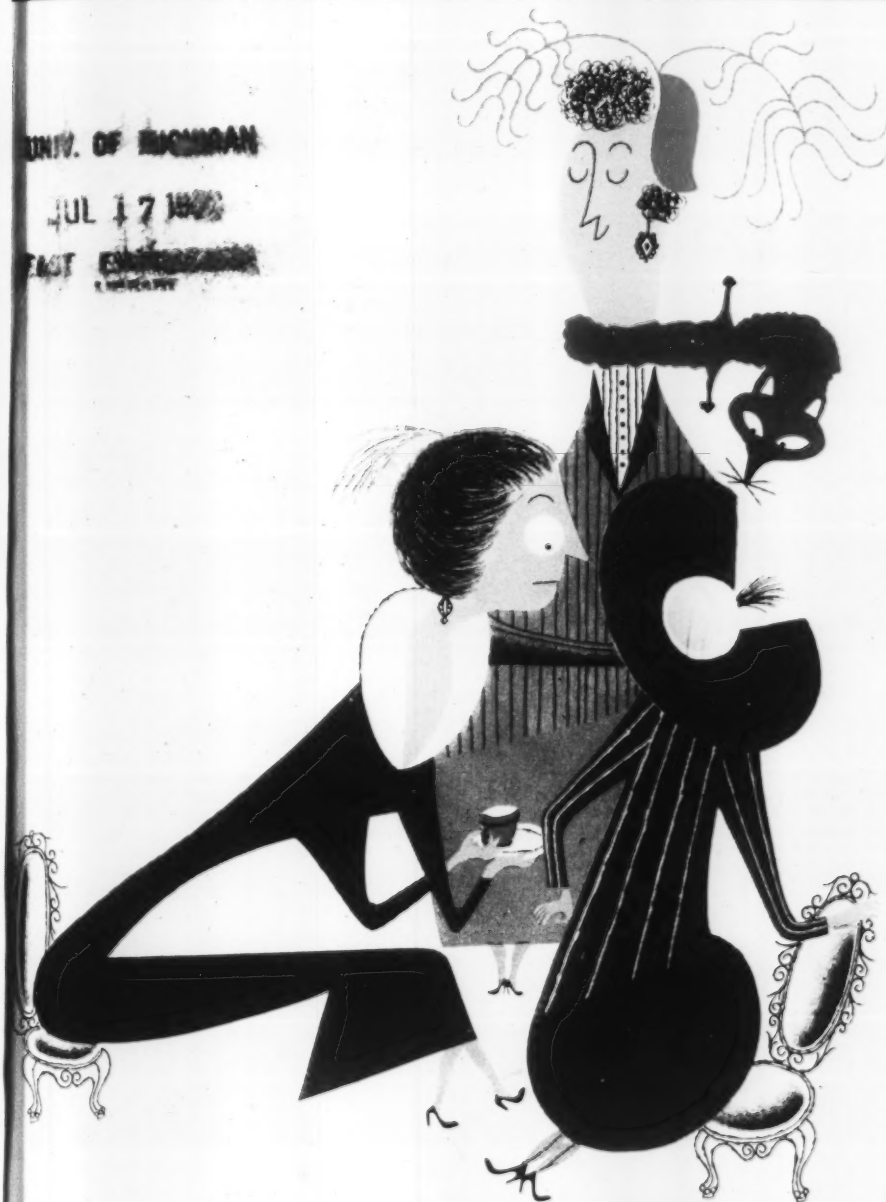
UNIV. OF MICHIGAN
JUL 17 1950
EAST ENGINEERING



speaking of operations

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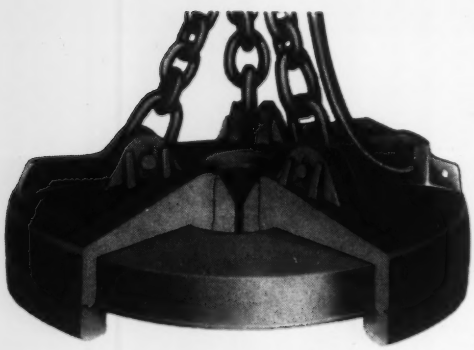
SALVAGE OPERATIONS have begun on recovery of two barges of pig iron which sank in the river above Lovers' Leap, Monday evening. One barge is partially in view while the other one is completely underneath the water. A large magnet is being used to haul the pig iron from the river to railroad cars which are waiting on the tracks in the right of the photo. There are approximately 25 carloads of iron on the two barges.—Staff photo.

ALTON EVENING TELEGRAPH THURSDAY, APRIL 13, 1950

25 Carloads of Pig Iron Quickly Salvaged by EC&M *All Welded* Lifting Magnet



Double-sealed against moisture —a watertight coil within a *watertight* housing.

Taken from regular steel mill service, an EC&M 55-inch diameter Type SW *All-Welded* Lifting Magnet efficiently salvaged the pig iron from two barges which sank in the Mississippi River at Alton, Illinois.

The EC&M *All-Welded* Lifting Magnet was selected for this operation because the plant management had confidence that the all-welded construction of the EC&M Magnet would withstand the underwater service and they knew, from experience, that the pig iron would be recovered in a minimum number of lifts. There were no bolts to tighten, no special attention needed to put the magnet in shape for quick recovery of this sunken cargo.

The *All-Welded* design of EC&M Type SW Lifting Magnets keeps moisture out of the coil and maintains lifting ability.

WRITE FOR BULLETIN 900

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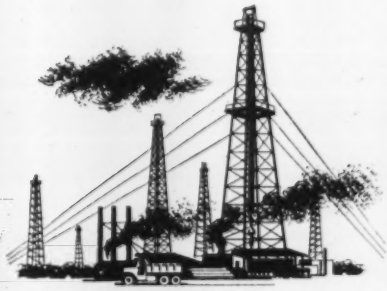
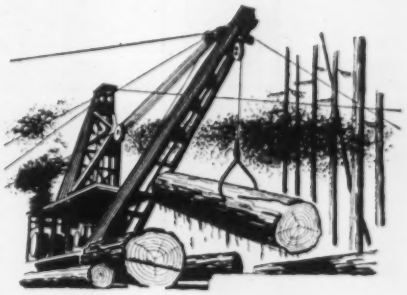
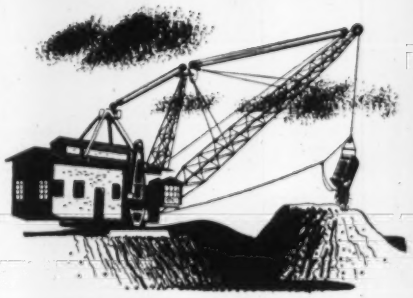


For rotary drilling,
*PRE*formed, Internally Lubricated wire line designed to wind smoothly on drums and to withstand abrasion from running through blocks.

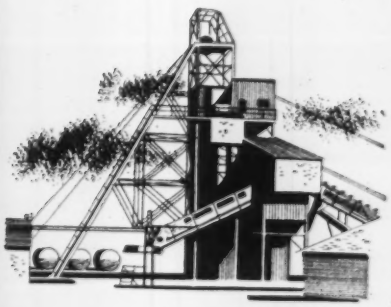


For logging operations,
tough flexible ropes for tractor arch lines, chokers, skidders and loading.



For shovels and draglines,
ropes for different sizes and types of equipment designed to give best service for your particular needs.

The right rope for each job is available from



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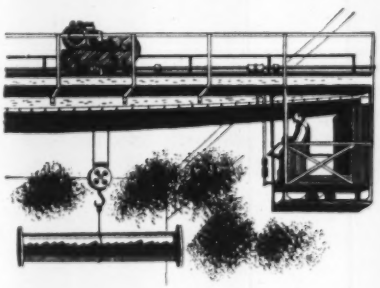
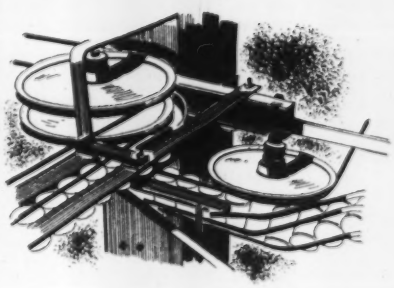


For cranes and hoists,
small or large, *PRE*formed Internally Lubricated wire ropes of the correct size and flexibility for each use.



For can conveyors,
there are bright carbon steel, stainless steel and monel metal wire ropes to meet various service conditions.

A thousand and one
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Besides the ropes listed above, Macwhyte makes many more such as cable tool drilling lines, elevator cables, incline or haulage ropes, scraper ropes, aircraft control cable assemblies, ropes for ship rigging and guying work, as well as hundreds of sizes and types of single-part, round-braided or flat-braided slings for material handling.

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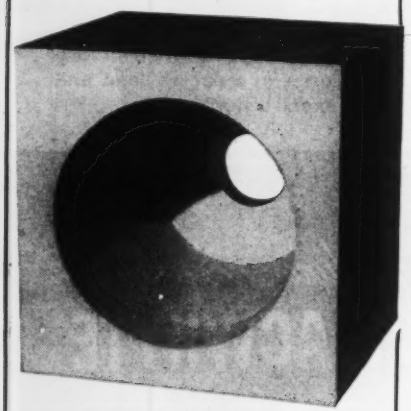

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Behind the Scenes . . .

Naughty, Naughty

We have just had our wrists slapped smartly. The Human Engineering Foundation of Summit, N. J., informs us, to our surprise, that we are not contributing to "positive, constructive thoughts."

Penton Publishing Co. ran a full-page ad in the June 26 issue of *Advertising Age* showing how STEEL and other Penton publications can help you. A seemingly innocuous drawing depicted four men reading STEEL. Two of the men, alas, were smoking. The foundation sternly blue-penciled the offending pipe and cigar and minced no words when it said: "Such controversial, irritating, negative pictures as this should forever be avoided."

The foundation had some other withering comments of a more general nature, then ended on a more positive, constructive thought: "Help advertise and demonstrate a new and better way of life by avoiding all reference to and use of tobacco, liquor, coffee, tea and colas."

Antidote

Our advice is: Don't get the summer flu. We were smitten just as we were trying to get this column out. Already we've had to delete two prescriptions that somehow got mixed in with this item. Whoops, there's another one.

Mix four jiggers of bourbon with small quantity of soda, add ice, stir well before using.

Packaged Bargain

"You men are getting so sloppy that I hardly have time any more for my editorial functions." We frowned as we read this complaint in a note from Geraldine, a cleaning woman in the building and our night editor. We were counting on some data from her. But we relaxed as we read further.

"I finally have finished an analysis of the last ten issues of STEEL. In an **average issue** there are about 70 news stories, 85 items on appointments in 'Men of Industry,' 20 production-engineering stories, 30 to 35 reports on new products, 3223 price entries, 70 market reports on sheets, scrap etc. and 35 items in the 'Metalworking Briefs' section.

"P.S. Only one out of three editors regularly uses his ash tray; only two out of three consistently hit the waste basket with the things they throw toward it. Why?"

Because, Geraldine, they're too busy writing all those stories and getting all those prices.

No Headache

One of our cohorts in an industrial suburb of Cleveland reports that a doctor there offers STEEL in his waiting room, in addition to the usual reading fare in a medico's outer office. The explanation: The doctor is retained by several metalworking companies and most of his patients are industrial men.

Puzzle Corner

W. J. Okray of Kleenaire Corp., R. R. Rychener of National Gypsum Co. and N. D. Thomashefsky of Jones & Laughlin Steel Corp. were the first ones in with correct answers to the July 3 problem about bread. The hunter paid 10 cents to one tramp and 70 cents to the other for bread. He paid at the rate of 30 cents a loaf, pretty steep even for these times.

Stations Y and Z are 120 miles apart on a single-track railroad. At the same instant that one train leaves Y for Z at 25 m.p.h., a second train gets its signals mixed and leaves Z for Y at 15 m.p.h. Just as the first train leaves Y, a fly flies from the front of the engine straight toward the other train at 100 miles an hour. On meeting the second train, it immediately turns back and flies straight for the first train. It continues to fly back and forth with undiminished speed until the trains collided. How far did it fly?

Shrdlu

(Editorial Index—page 43)

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STEEL

The Magazine of Metalworking and Metalproducing

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***Next Week*... How To Evaluate Induction Heating for Forging and Forming... More Zirconium Coming Up!... Knit Wire Finds New Applications... Tin Plate Cleaning, Annealing Cycle May Be Cut to Less Than Two Days**

Fast Action

A FAST CAMERA and plenty of light are needed to catch the lightning-swift action of this new Morgan Electric Crop Cobble Shear which is operating so successfully in a new 10″ Morgan Merchant Mill.

The steel industry is full of such Morgan innovations.

The ability of Morgan engineers to conceive workable solutions to unusual rolling mill problems is recognized the world over. That's why it will pay you to consult Morgan early in your planning.

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July 17, 1950

We're Not So Hot!

While we are waiting tensely to learn what will be needed to fulfill our commitment in Korea, it would be well to take a new inventory of the elements of strength and weakness in our nation and to proceed promptly to correct deficiencies.

From a military standpoint we are probably worse off than is generally realized. The early engagements in Korea indicate a superiority of equipment in favor of the North Koreans which must be embarrassing to every proud American. Also this inferiority of American weapons is corroborated by an article by Hanson W. Baldwin in the current issue of *The Saturday Evening Post*.

Mr. Baldwin, who is a highly respected military expert, goes a long way toward deflating our ego as to American prowess in war. He says that the best plane at the beginning of the last war was a Jap fighter and at the end a German jet. Japan and Germany had mightier naval vessels. Russia and Germany had tanks superior to ours and even now Russia is ahead of us in tanks, submarines and some other items. Mr. Baldwin cites some weapons in which we were and are superior, but in the main we are second, third or worse in many important categories.

Significant is the fact that Mr. Baldwin says the equipment in which we lead the world is that which was adapted from commercial usage—that which was designed and developed by private industry. The equipment in which we trail other nations is that designed and developed by government personnel.

If this is true—and there seems to be no good reason to doubt it—then we have a lesson that should be heeded immediately. That lesson is to organize so that the government military experts and the specialists of private industry can collaborate more effectively in the design and construction of military equipment.

Our resourceful, capable and gigantic private industry is one of the few things in which we lead the world, yet Washington demagogues are condemning it constantly. Now that we are in serious trouble, why not quit smearing our greatest asset! Why not utilize its ability and "know how" to correct the weaknesses of our government's military system!

* * *

DON'T UNDERESTIMATE! As this is written, officialdom in Washington still talks in terms of "business as usual." Nobody in authority has yet admitted that the government has any intention of invoking emergency controls in the immediate future.

Throughout industry there is a general disposition to discount this "nothing to worry about" attitude displayed in Washington. From what is known of our problem in Korea and other points of possible trouble, it seems inevitable that a sizable mobilization plan of some kind must be launched soon. It may take the form of an inch-by-inch advance into full-scale mobilization. Voluntary allocations of certain key materials, such as steel, may be the first step. Remembering the experience of World War II, it is quite likely that once we get into voluntary action, mandatory programs will follow not far behind.

Right now it looks as if the Korean campaign will be a long drawn out affair, unless the issues at stake are settled by agreement, which seems unlikely. Considering what will be required to

(OVER)

win out in Korea, to say nothing of possible demands at other points, it is difficult to see how some metalworking companies can expect to pursue "business as usual" much beyond Labor Day.

Under present circumstances, it is far better to over-estimate the gravity of our position than to under-estimate it. Be prepared! —p. 51

* * *

LOW COST CAPACITY: Unconventional is the word for the new steel plant of McLouth Steel Corp. on the Detroit river at Trenton, Mich. Ingots poured from metal tapped from four 60-ton electric furnaces are broken down into "slabs" ⅝-inch thick, up to 39 inches wide and perhaps 300 feet long in an unusually speedy blooming mill. Without reheating, the cropped slabs are given about seven passes through a reversing-type hot strip mill. The emerging strip, in automotive gages, is coiled, pickled and finished for shipment. Time lag from ingot to coiler is a matter of minutes.

This remarkable layout, affording an annual capacity of 400,000 tons, was built in 16 months at a cost of only $25 million. This is new capacity at only $62.50 per ton—a phenomenally low figure.

Financing also was unusual. Large automotive customers put up $8 million on 10-year second-mortgage notes and RFC lent $14.5 million on first-mortgage notes. Today the plant is shipping 25,000 tons of strip a month. —p. 62

* * *

OFF-SEASON RECORDS: Electric power output in recent years has been a pretty reliable index of national economic health because it reflects industrial and rural and urban consumer activity. Throughout the years a rather standard seasonal pattern of power consumption has been established. According to this pattern, the week of greatest volume of electricity consumed is the week which includes the Friday and Saturday before Christmas.

Last December the peak was just short of 6,000 million kilowatt hours. Last week it was 5,900 million and the week before it was 6,115—thus exceeding in the traditional "slack" season the high of the traditional peak season. At the present rate of electric power consumption you can look for new records in off-season periods and really spectacular highs in December. This is the result of marked gains in industrial and domestic use of electric current. —p. 70

* * *

RISK CAPITAL SHRINKS: According to the Securities & Exchange Commission, American corporations are in a reassuring state of financial fluidity. At the end of the first quarter their net working capital was $69 billion, a new peak. This compares with $67.7 billion at the end of 1949, $64.8 billion at the end of 1948 and $51.6 billion at the end of World War II. Ratio of current assets over current liabilities also showed improvement.

While increasing working capital $1.3 billion, corporations invested about $3.4 billion in plant and equipment during the first quarter. Of this expansion of $4.7 billion, less than a quarter came from external sources. Long-term borrowings accounted for $600 million and new stock issues brought in $500 million. The remaining $3.6 billion came from internal sources —depreciation accruals and undistributed profits.

These current figures confirm the disconcerting tendency of recent years, namely, that the flow of risk capital from private investors is diminishing steadily. —p. 71

* * *

DUCTILE IRON'S RECORD: Nodular graphite cast iron has been a subject of so much debate during the past two years that the editors of this publication thought it would be a good idea to take an inventory of the experience of foundries which are producing castings of this type. All licensees under International Nickel Co. patents were asked to submit performance data on the material.

It is difficult to generalize on the results. You will have to read the testimony in order to interpret it fairly. However, you will note that while many companies regard their work to date with ductile iron as experimental, others have accumulated a convincing volume of proof of its satisfactory performance. Perhaps it is too early to determine the exact role nodular iron will play as an engineering material, but in two short years it has gained a sufficiently wide acceptance in certain fields of application to indicate it has a promising future. —p. 85

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

VIA THE BACK DOOR—Government spokesmen say, "Business as usual," when they're asked about mobilization plans for industry (p. 51). That statement is not quite accurate and is a tip-off on the way the administration will sidle into a preparedness program if the Korean war is protracted. A voluntary allocations scheme probably will come first, perhaps by early fall. That will slowly give way—perhaps by the end of the year if the war lasts that long—to a mandatory program. Pooh-pooh talk to the contrary in Washington, the government already has taken some mobilization steps. It has obtained labor's approval of a tentative program to round up manpower. It is tightening its regulations governing stockpiling of materials. It is moving up delivery dates on military orders.

BUZZ-BUZZ—The Korean war has brought a flood of rumors concerning metalworking. Three of them are: A new freight car building program will be started by the government; nickel is already being rationed by the government; iron and steel scrap is getting tight. The facts: There is no freight car building program planned, but the war has caused a flurry of interest in new freight cars by railroads (p. 52). The government denies having anything to do with a rationing program started July 1 by International Nickel Co. of Canada Ltd. (p. 53). Scrap is not unusually tight (p. 55). Supplies are much better now than before World War II.

MEMO TO STALIN—American steel companies produced an alltime record of 47,106,000 tons of ingots in the first half of this year (p. 57). June output was 8,131,000 tons, the largest production for that month on record.

STAMPEDE—War or no war, the metalworking industry will have a sensational year for 1950 (pp. 68-71). Scare buying of consumer goods is mounting, boosting sales that would have been excellent even if there had been not a word breathed about Korea. Steelmaking rates continue above practical capacity.

BETTER BUSINESS ABROAD—Business is improving in West Europe because of: The sensational industrial pace in the U. S., the Korean situation and more Latin American buying (p. 56). American buyers are combing the European markets for steel, chiefly light flat products. West Germany and Benelux are getting the bulk of the orders because they can offer quick delivery dates.

FLY IN THE OINTMENT—Robert N. Denham, general counsel of the National Labor Relations Board, is concerned about a little-discussed point in pension pool agreements such as negotiated between the UAW and some 60 tool and die companies around Detroit (p. 58). Mr. Denham thinks pensions are rewards for faithful and continuous service rendered to employers. In the pool plan, an employee won't lose his pension rights if he leaves one employer and goes to another within the pool. That changes the concept of pensions, says Mr. Denham, and may fasten new burdens on employer members of a pool that may not yet be fully realized.

UNCONVENTIONAL—Take a look at the McLouth Steel Corp. plant at Trenton, Mich. (p. 62). It's unusual in its layout, equipment and financing. At the facility, an ingot leaves the soaking pits to go through a bloomer which gets it down to $\frac{5}{8}$ inch. Then without reheating, it goes through a reversing mill to squeeze it to automotive gages. A group of large automotive customers and the RFC helped finance the plant.

HERE AND THERE IN INDUSTRY—New work stoppages numbered 450 in May, a 12½ per cent increase from the 400 beginning in April (p. 58) . . . Pressed Steel Car Co. Inc. is selling its McKees Rocks, Pa., plant to a syndicate that will convert the 100-acre site into a multi-industry development (p. 53) . . . In an unusual deal that included bartering of $2.5 million worth of aluminum pig, Reynolds Metals Co. has acquired an aluminum sheet mill at McCook, Ill., two plants in Arkansas and one in Canada from the RFC (p. 54) . . . Follansbee Steel Corp. and Newport Steel Corp. are reportedly talking of merger.

Production-Engineering News—p. 79 *Market Summary*—p. 125

Let us shoulder your steel requirements

Our duties at Ryerson differ widely, but we all shoulder part of the same job: *supplying you with the exact steel you need exactly when you need it.*

Whether it's answering your call with a smile . . . checking for proper analysis of your steel . . . cutting or otherwise preparing your steel accurately to specification . . . delivering swiftly to your door . . . we all work shoulder-to-shoulder to take care of your every steel requirement.

Though heavy demand may still cause some shortages, our stocks remain the nation's largest. May we serve you the next time—any time—you need steel?

PRINCIPAL PRODUCTS

CARBON STEEL BARS—Hot rolled & cold finished

STRUCTURALS—Channels, angles, beams, etc.

PLATES—Sheared & U.M. Inland 4-Way Safety Plate

SHEETS—Hot & cold rolled, many types & coatings

TUBING—Seamless & welded, mechanical & boiler tubes

ALLOYS—Hot rolled, cold finished, heat treated

STAINLESS—Allegheny bars, plates, sheets, tubes, etc.

MACHINERY & TOOLS—For metal fabrication

JOSEPH T. RYERSON & SON, INC. PLANTS AT NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND
DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO

RYERSON STEEL

STEEL
A PENTON PUBLICATION

Inch-by-Inch Mobilization Likely

If the Korean war is protracted, government controls on industry will come gradually, obliquely. The administration is still talking "business as usual"

WATCH for the federal government to inch into full-scale mobilization plans if the Korean war is protracted —and it looks like it will be.

Few metalworking companies will even notice much change until early fall, but by the end of the year a scattering of priority, allocation and perhaps even price control plans will be in force.

Inch-by-Inch — The changes will come obliquely, quietly, often preceded by a pooh-pooh from the government denying that it is considering tighter mobilization action. A voluntary allocations program would come first, probably administered by the Commerce Department. That would gradually give way to a mandatory program, probably administered by the National Security Resources Board. Why the obliqueness? To keep Americans as calm as possible and to give the Russians every chance to back down.

The White House late last week had nothing to say about a report that President Truman plans to ask Congress for stand-by power to allocate steel and other critical items. As legislation stands now, the government can issue mandatory priorities on military orders only, as provided in the Selective Service Act. To get authority for even voluntary allocations of material not for the Defense Department, the administration probably would have to go to Congress for a law something like 395, under which a voluntary allocation program operated from Dec. 30, 1947, to Sept. 30, 1949.

All's Well? — Right now, Defense says it doesn't even need the mandatory priority rights to get its orders through. Munitions Board denies that it wants help in getting materiel. NSRB says no allocations program is yet needed. Commerce sings the same theme, but it admits: "We're doing a lot of thinking on the subject."

That thinking in Commerce and other departments may lead to disquieting thoughts. One would be this: How fast will the need for a tighter mobilization program materialize? Remember that industry is operating virtually at capacity and that labor reserves are low. Idle capacity and relatively high unemployment before World War II helped cushion the shock of conversion then.

Action Louder Than Words — "Business as usual" talk to the contrary in government circles, it's a good guess that the NSRB is or should be doing more than mere abstract thinking about the mobilization picture. The board probably is shaping up plans that may not be used now, but could be in a few months if the Korean war worsens. Proof that business is not as usual can be seen in moves in two of four vital mobilization areas: Manpower and materiel procurement. Not much is yet stirring in two other areas: Industrial capacity and price control.

Manpower — NSRB Chairman W. Stuart Symington has persuaded labor leaders to co-operate in a plan for a joint committee to work with him on manpower problems if the Korean war worsens. Mr. Symington last week became the supreme chief of war mobilization when Congress said O.K. to an administrative reorganization plan centralizing powers in the chairman's hands.

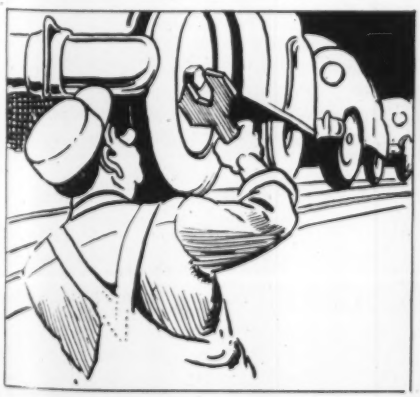
Unemployment averaged more than 8 million through 1940 and 5,560,000 in 1941. Despite that labor reserve it took the country 2½ years to get into war production gear. Now the jobless number less than 3.5 million. Even without the Korean affair, 1950 would have been a record-breaking employment year. Out-of-area labor recruitment is already being planned by some Midwestern companies.

But there's another side to the labor coin. Part of the difficulty in getting started on war production before and in the early part of World War II was training workers who never before had metalworking jobs. Now most of the plants are fully manned. A conversion would be more a matter of equipment than people.

Materials — Government officials say there's "nothing to worry about" regarding raw materials in case the U. S. gets involved in a big war. But what the government says and what it does are two different things. Here's what it has been doing:

1. A new directive says that stockpile quotas for strategic and critical materials must now be met on time. Formerly, if the July quota for nickel, for example, was not met, no one bothered much because it could be made up in August or September. That practice is out from now on.

2. Defense won't reveal comparative figures, but bet your money that materiel orders have increased. Proof of this is the contracts for $50 million worth of trucks to be built by Reo and Studebaker and the $22 million order for 8300 jeeps from Willys-Overland. With peacetime opera-



tions at or near capacity, there must be some give somewhere to turn out such a big quantity of military equipment.

3. Defense is requesting that delivery dates be advanced on many of its orders. The advances are bound to cause tie-ups in peacetime schedules.

4. The government is accelerating its purchases of copper for stockpiling (see p. 132 for details).

5. It is urging Congress to suspend the duty on copper to stimulate imports.

6. It is negotiating to buy half of Bolivia's tin output.

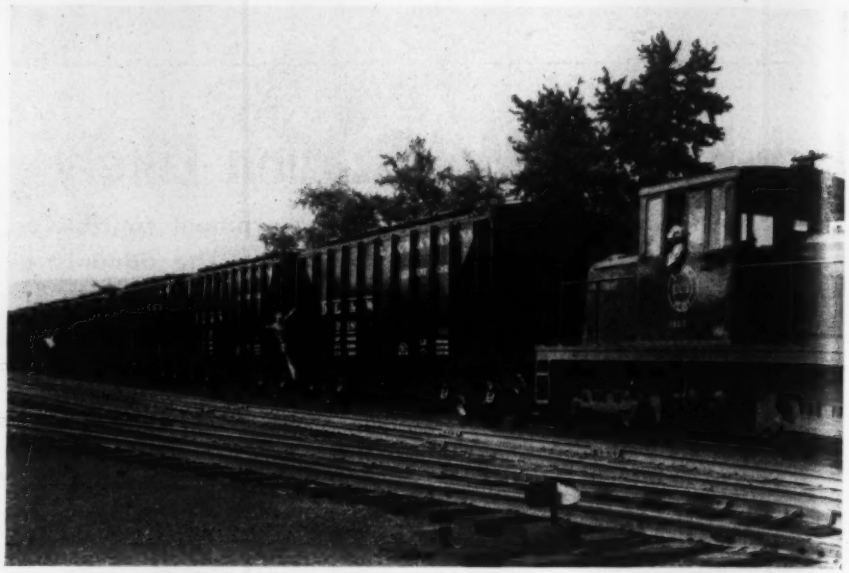
7. It is boosting synthetic rubber production.

H. B. McCoy, head of Commerce's Office of Commerce & Industry and probable top man in any government voluntary allocations program, says steel scarcities could be partly relieved without recourse to any allocation scheme. He suggests that more steel be imported. American firms, incidentally, are already scouring Western Europe for the metal (see p. 56). One odd and incongruous note: The American and other Allied commissioners for West Germany have just lifted the embargo on steel shipments from West Germany to East Germany.

The Chinese Reds have halted all tungsten exports to the U. S. A shortage of that material would be a serious bottleneck to an all-out mobilization program. The U. S. has been stockpiling the metal, mainly from domestic sources.

NEA

RUSH JOB: At Lockheed Aircraft Corp.'s plant in Burbank, Calif., technicians on assembly lines are working against time to turn out F-94, all-weather fighters. These all-automatic jets are equipped with radar and are a modified version of F-80s now fighting in Korea



Freight car inquiries and orders are growing as the United States prepares for an extended Korean campaign. Will it mean . . .

Capacity—The nation's productive capacity is in good shape, in far better condition than before World War II when only the minimum expansion and modernization had been carried on in the preceding ten years because of the depression. Expenditures on new plant and equipment have risen from $8.2 billion in 1941 to $16.2 billion in 1947, $19.2 billion in 1948, $18.1 billion in 1949 and probably more than $16 billion in 1950.

Prices—Price control legislation is a remote possibility, but still a possibility.

P & W Gets Navy Engine Award

United Aircraft's Pratt & Whitney Division received a new Navy award of $4,091,836 for aircraft engines, the Navy announced.

Number and type of engines were not disclosed. United also received Navy awards of $249,735 for propeller assemblies and $50,772 for flotation gear to be supplied by the Sikorsky Division at Bridgeport, Conn.

$15 Million Jet Program On

A $15 million expansion program is underway at the Lewis Flight Propulsion Laboratory, Cleveland, says Dr. R. E. Sharp, director of the government research center.

About $13 million will be spent erecting and equipping about a dozen new buildings that will make up a new propulsion sciences laboratory used to develop faster, more powerful jet engines. Construction of the buildings and equipment will take over a year to finish.

More Plate, Less Sheet?

Railroad car inquiries mount. May divert rolling capacity from light material

TIGHTNESS of the steel sheet and strip supply may become even more extreme as a result of a flurry of interest in new freight cars.

Railroad cars require steel plates; if the demand for plates becomes great enough it may be necessary for some of the continuous strip mills now rolling sheet and strip to be pressed into use to supplement output of today's existing plate mills.

Because of the disruptions such a move would make on industry and the economy in general any switch of sheet and strip capacity to plate will be made only after grave consideration and a determination that such a switch is necessary for the country's security.

That's the Attitude—Since receiving inquiries for a sizable tonnage of steel plate for carbuilders, one large producer of sheet and strip is considering devoting part of its sheet and strip capacity to plate production, as it did during World War II. This producer's attitude is: If more railroad freight cars are needed the steel industry will have to supply the steel.

Another big steel producer has carbuilders' inquiries for eight to ten times the tonnage of plates it now is supplying for freight cars.

War Born—While freight car ordering this year has been considerably ahead of the abnormally low rate of 1949 the current flurry of in-

terest in cars is said to have been set off by the war in Korea.

It is reported the Pennsylvania Railroad is inquiring for 5000 to 10,000 cars, New York Central for 4500, Chesapeake & Ohio for 2000, and Boston and Maine for 750. If orders for these are placed in July it would make this month at least as big as May, the biggest one thus far this year (see page 68).

Watch Shipbuilding — Admitting that a railroad car building upturn would step up the need for plates, one steel company spokesman said there would be no really big plate producing program unless shipbuilding is revived. Plate production in the first four months of 1950 totaled 1,243,204 net tons. That is at a yearly rate of 3,729,612 tons, a figure considerably below the peak of approximately 13 million tons during 1943 and 1944 when ship and tank output were at high levels. Much of today's plate is going into fabrication of line pipe.

With the steel industry producing at or above capacity it is possible to provide more plate and other steel to freight car builders only by cutting down the supply of steel to other consumers, it was pointed out by steel company officials.

Pressed Steel Sells to Syndicate

Pressed Steel Car Co. Inc. is selling its McKees Rocks, Pa., plant, closed since 1949, to a syndicate that plans to dispose of the machinery and equipment to create a multi-industry settlement on the 100-acre site.

The sale (price is rumored to be about $2 million) includes all buildings, real estate, machinery and equipment at the plant located on the Ohio river, 11 miles north of Pittsburgh.

Pressed Steel says factors that influenced its decision to sell were: A lack of sufficient car orders since the plant was closed July, 1949; great overcapacity in the industry at large; no foreseeable increase of car buying in large quantities; and the large cost necessary to rehabilitate the plant to enable it to compete effectively.

Nickel Rationed to Consumers by International

USERS of nickel-bearing steels may run into some additional procurement problems late this summer or early next fall.

Under a program instituted July 1, International Nickel Co. of Canada Ltd., the biggest supplier, is rationing nickel to consumers. Effects of this rationing may be varied, for STEEL learned that the extent of the rationing varies among consumers. One steel producer said its nickel allotment has been cut 25 per cent, another revealed it had been cut 15 per cent.

Nickel Scrap Sought—Other factors determining how much the steel industry—the biggest consumer of nickel—may be pinched depends on steel producers' inventories of nickel and their ability to procure nickel scrap or nickel-bearing scrap.

Nickel scrap already had been in strong demand because users were trying to augment their supplies of nickel and hold down costs. The money-saving factor increased in importance when the price of nickel went up 20 per cent at the end of May. Not only does pure nickel scrap continue in strong demand but there is an increasing interest in any scrap containing nickel. So, the price went up on the two.

Short-Lived Shortage?—Some observers feel that the nickel shortage will be short-lived. If it isn't and the demand for nickel-bearing steels doesn't decline there may be necessity for metalworking plants to make some shift to steels containing less nickel than those they are currently using.

While International Nickel Co. made no public announcement of its rationing it was reported it faces a demand that exceeds its productive capacity. There was conjecture whether all this demand comes from the high-level operations of the steel industry. Some observers speculated that the rationing was brought on by stockpiling by the U. S. government. Although government officials would not admit they have increased the scope of their nickel stockpiling activities it is known that government stockpiling demands became more exacting when the U. S. began military action in Korea. Heretofore if a stockpiling quota was not fully supplied in one month the shortage could be made up in following month or maybe even a little later. Now the full quota has to be in by the end of each month.

Sales Best Ever — International Nickel Co.'s sales of nickel in the last three months are said to have been more than double the rate in the company's largest prewar year, 1939, and approximately 25 per cent over the rate in the best postwar year, 1948. In 1939 International Nickel's sales of nickel in all forms totaled 210,194,135 pounds, and in 1948 they amounted to 240,098,274 pounds.

The steel industry's demand for nickel is reported to have been heavy the last several months when steel production has been at 100 per cent or more of capacity. Even in the first four months of 1950 before the steel industry's production exceeded 100 per cent of capacity the monthly average output of stainless and other alloy steels was 23 per cent above the monthly average for all of 1949. Except for one week since April the steel industry has operated at or above 100 per cent of capacity. Sharing in this increase in output have been stainless and alloy steels, some of which require nickel.

. . . if sheet-strip capacity goes into rolling plates, auto output will drop. Full haulaway yards, like Chevrolet's above, may empty out quickly

Big Month for Reynolds

Reynolds Aluminum gets McCook plant and Reynolds Metals dedicates Sheffield plant

JULY, though only half over, is a month that Reynolds Metals Co., Louisville, will well remember:

In an unusual transaction that included barter of over $2.5 million worth of aluminum pig for stockpiling, Reynolds Aluminum Co., a Reynolds subsidiary, got the big, government-owned aluminum sheet mill at McCook, Ill., two plants in Arkansas and one in Canada from Reconstruction Finance Corp. The price was over $50 million.

The company also dedicated its $3 million aluminum cable plant at Sheffield, Ala., at the beginning of the month.

Aluminum Co. of America operated the McCook plant during the war and offered to buy it at the end of the war for over $30 million or rent it for $2,410,800. But RFC turned down the company's offer and leased the plant to Reynolds.

The new Sheffield plant is housed in an aluminum building 860 feet long, containing 145,000 square feet of floor space. Located alongside Reynolds aluminum reduction, sheet and foil mills, the plant has an annual capacity of 60 million pounds of electrical transmission line. New redraw equipment in the plant is supplemented by five 10-die and one 7-die tandem wire-drawing machines that will operate at high speeds when reducing the ⅜-inch diameter redraw rod to wire of the size desired. An example: They reduce the rod to 0.0772-inch diameter wire in a single run through the machine at a speed of 5000 feet per minute.

The plant also has 19 single layer 7-bobbin stranding machines, a single layer 12-bobbin machine and a multilayer 54-bobbin stranding machine. The small units operate at speeds up to 320 feet per minute; the 54-bobbin unit is capable of working at 100 feet per minute. Hoists and a complete monorail system serve the stranders.

The new plant also has special coil-wrapping equipment that eliminates the need for conventional wooden reels even when shipping 1000-pound coils. The facilities for chemical, physical, electrical and mechanical testing include a huge tensile testing machine with a capacity of 120,000 pounds for pulling to rupture the largest size cable.

Kellogg Sells Kellex Subsidiary

Warren L. Smith, president of M. W. Kellogg Co., refinery and chemical engineers of Jersey City, N. J. and New York, announced sale of the stock and assets of one of its subsidiaries, Kellex Corp., to Vitro Mfg. Co.

Contracts, currently held by Kellex, primarily in atomic energy development, will be retained by that organization.

Mr. Smith says the sellout was in accord with Kellogg's policy of concentrating its commercial development, engineering and manufacturing efforts in the petroleum, chemical and power fields and confining its government contracts to development engineering and manufacturing in jet propulsion, guided missiles, etc. The latter activities are conducted by Kellogg's Special Projects Division in Jersey City.

Kirk & Blum Buys Planer Plant

Kirk & Blum Mfg. Co., Cincinnati, a dust and fume control manufacturer, acquired the entire plant and property of Cincinnati Planer Co. The plant, located in suburban Oakley, will be occupied by K & B about the end of the year.

The company's products also include sheet metal parts and assemblies, weldments, electrical control boards and enclosures. It also does work in stainless steel, aluminum and special alloys.

Hayes Will Take on Axles

Hayes Steel Products, Toronto, Ont., will expand operations by undertaking the manufacture of a special type of axle for automotive vehicles. The proposed project will cost about $1.5 million.

Dominion Wants Blast Furnace $

Dominion Foundries & Steel Ltd. of Canada will ask stockholders to approve a new stock issue to obtain capital for construction of the proposed blast furnace and coke oven plant at Hamilton, Ont.

IH To Sell Auburn Plant for $1

International Harvester Co. officials were notified that community leaders of Auburn, N. Y., finally agreed to accept the gift of a plant from the company.

The actual transaction will involve sale of Harvester's Auburn baler plant for $1 to a nonprofit corporation this month. Although the plant has been appraised at $250,000, company officials estimate that it would take many more times that much money to duplicate it.

IH announced a year ago that it would close the plant, which employed about 1300 and was the town's biggest industry, because the company could no longer operate it economically in the production of Harvester farm equipment.

Pitney-Bowes Expanding

Pitney-Bowes Inc., manufacturer of postage meters and mailing machines, is starting a $250,000 building expansion program that will add 36,000 square feet of floor space to its plant and general offices at Stamford, Conn.

It's the company's second expansion in five years. It will add a fourth floor to its administration building and extend the west wall of its plant

REYNOLDS METALS CO. NEW CABLE PLANT
. . . cable 1½ inch thick in one pass at 100 feet per minute

to enlarge machine shop and assembly operations.

John H. Pratt Jr., vice president for manufacturing says, "Postwar mailing business increased so rapidly that we have been crowded for space for some time. Our gross business today is running just about double what it was in 1947, the first year we had full use of our last expansion."

Levinson Moves Office

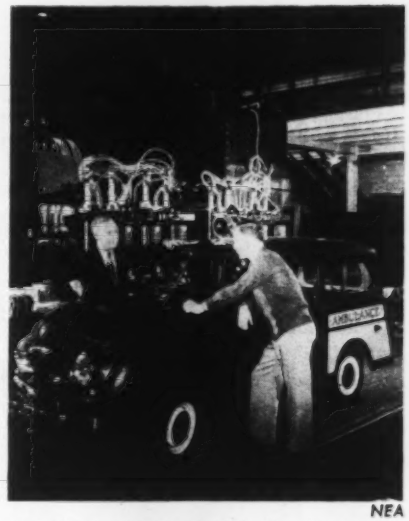
After over four decades in the same location, Levinson Steel Co. last week completed the job of moving into its own building adjacent to its fabricating plant and warehouse in Pittsburgh.

The company is using the four-story brick building to house its sales offices and executive departments.

TEMA Elects New Officers

Tubular Exchanger Manufacturers Association, New York, elected these men at its annual meeting: President, C. H. Currier, president of Ross Heater & Mfg. Co. Inc., Buffalo; vice president W. C. Beekley, president of Whitlock Mfg. Co., Hartford, Conn. George P. Byrne Jr. remains as secretary-treasurer.

Besides Messrs. Currier and Beekley, T. H. Miley of Foster Wheeler Corp., New York, and G. A. Worn, Lummus Co., New York, constitute the executive committee of the group; it is an association of tubular exchanger manufacturers formed several years ago to establish and maintain high standards of design, fabrication and performance in shell and tube heat transfer equipment.



NEA

INDOOR AMBULANCE: Small enough to speed down any manufacturing aisle of the Transformer Division plant of Westinghouse Electric Corp. at Sharon, Pa., this Crosley ambulance can reach any part of the ¾-of-a-mile plant within several minutes. It can accomodate a full-length stretcher if necessary. The ambulance is the latest innovation in the safety program of the plant that already won National Safety Council citations four consecutive years for being one of the safest plants in the heavy machinery field

50,000 Say "Happy Birthday" to Armco Steel

NEARLY 50,000 residents of Middletown, O. and the Miami Valley turned out July 12 to help the Armco Steel Corp. celebrate its 50th anniversary. When the party ended at Middletown Sunset Park at 11 p.m., Armco guests had consumed eight tons of hot dogs on which three barrels of mustard had been applied, 160,000 soft drinks and huge quantities of ice cream and crackerjacks; and they had taken in a carnival, vaudeville show, aquacade, wrestling bouts and fireworks display.

Long known for its excellent community relations at Middletown where it has never had a strike, Armco finds itself in a happy situation on its 50th birthday.

Under the mill pricing system, Armco is the closest source of steel for automotive, refrigerator and other metalworking plants in a rapidly expanding industrial area.

To meet growing requirements, Armco will complete by Dec. 1 a $12 million open-hearth shop with three 250-ton furnaces that will add 600,000 tons of steel capacity annually. New to the steel industry will be hydraulic lifts which will deliver raw materials directly to each furnace and may save as much as 40 per cent in charging time.

Other improvements contemplated include the speeding up and modernizing of its 48-inch strip mill. Two new continuous galvanizing lines replacing older equipment now are in operation. At Houston, a new 70-ton electric furnace with capacity of 20,000 tons a month has just been authorized to permit greater product diversification for the southwestern market.

Charles R. Hook, chairman, thinks higher steel prices are justified on the basis of increased costs, including scrap, but feels that the industry will do all it can to hold them down. If necessary, he says, Armco—and the entire steel industry—can quickly switch to war requirements such as strip mill plates.

Scrap Shortage Unlikely

Visible inventories higher than at outbreak of World War II. Adequate for foreseeable needs

THE SCRAP shortage which characterized the early part of World War II is not likely to become a serious problem in the present crisis. Here's why:

Visible inventories of scrap are somewhat higher than at the outbreak of World War II.

Conversion to war production will be more gradual.

Flow of scrap to mills and foundries is now sufficient to maintain peak operations and no great increase in demand is foreseen.

No Quick Conversion—One reason for the scrap shortage in 1942 resulted from the necessity for changing over from peacetime to war production in the shortest time possible. After Pearl Harbor manufacturers flocked to Washington to obtain war orders. Civilian output was curtailed suddenly. During the changeover, the flow of industrial scrap to the steel mills dropped sharply. At the same time the mills were producing steel at capacity using great tonnages of scrap. The result was a shortage which led to the scrap collection campaigns and the utilization at times of low-grade scrap.

Don't Be Complacent—The situation is not good enough to justify complacency, scrap men admit, but neither is it a cause for great concern.

National directors of the Institute of Iron & Steel Scrap meeting in Cleveland last week took cognizance of the fact scrap supply may become more critical if the war worsens. They pledged full co-operation with the government in making available an adequate supply of scrap.

Price Controls?—A topic of conversation in scrap circles: Will price controls again be imposed on scrap? And if so, at what levels? Heavy melting at Pittsburgh was frozen at $20 in World War II. In World War I, it was $30. Today, labor is higher, freight costs are up, Social Security and taxes are high, equipment costs more. If prices are pegged, it will be at a higher level.

Better Quality Sought—Scrap men are working with the steel industry in an effort to improve the quality of scrap shipped and to reduce the number of rejects by mills. The scrap institute and leading brokers are advocating close adherence to specifications. The steel mills are inviting scrap dealers to tour their mills and see at first hand the problems the mills encounter if scrap is off grade.

West Europe's Business Outlook Good

Three factors probably account for much of the improvement: Sensational business pace in the U. S.; the world situation; Latin American buying

WEST EUROPE'S business weather is improving.

Export demand for steel has suddenly taken such a spurt that some producers can get away with premium prices. German steelmakers are tacking on $2 to $5 per metric ton for their overseas orders. German, French, Belgian, Luxemburg and British metalworking companies are all participating in the general upswing as production soars to about 25 per cent above prewar levels.

Three months ago many Europeans were talking recession and inventory adjustments. Why the sudden change? These three factors probably account for much of the improvement:

1. The sensational business pace in the U.S. is beginning to be felt abroad. Tight steel supplies in the U.S. have driven some American buyers to look for European supply sources, particularly for light flat-rolled products.

2. The Korean developments and the bleak international outlook in other parts of the world spurs activity.

3. Central and South American buyers are loosening up. Industrialization is in the air in those areas which need steel and equipment to mechanize.

Exports Buttress Ruhr's Boom

American steel buyers are helping to buttress an export boom that means good business to Western Germany. U.S. purchasers want pig iron, semifinished, bars, plates, sheets, wire rods and wire products.

Ruhr producers are selling on their quick delivery dates, not their prices. They're quoting $53 per metric ton and higher on steel bars, compared with the French price of $47 to $49 for the same product. But the French can't match the German shipping dates. For the same reason, the Germans are winning some Norwegian contracts from the British steelmakers.

The Poles, incidentally, are in the market for steel and have paid $4 to $6 per ton above market prices to Ruhr producers.

German steel exports for the year promise to top 2.2 million tons, far above last year's.

Steelmakers aren't the only ones sharing in the export business. Machine tool builders are working at capacity; 40 per cent of their production is going overseas. Large Turkish orders for German railway equipment have given a shot in the arm to that industry.

On the domestic front, the long-awaited, government-sponsored home construction program is at last under way. That is just beginning to make itself felt in German plumbing and other metalworking industries dependent upon building.

Still another factor giving a psychological impetus to business activity is the promise of more foreign capital. The Allied High Commission has approved progressive relaxation of the present restrictions on foreign investment in Germany. Not much added money has come in yet, but it will soon.

Benelux Steel Exports Way Up

Steel producers in Belgium and Luxemburg can also give quick delivery, so they're sharing in the steel export splurge, too.

Benelux steel exports to the U.S. rose from 7222 net tons in November, 1949, to 27,654 tons last April. Total exports for that month exceeded 310,000 tons. Belgian export prices range from about $45 per metric ton on semifinished to $61 on bars, compared with the $53 German price and the $47 to $49 French price on bars.

The Benelux bar price will jump to $66 per metric ton if a Belgium-Luxemburg-Netherlands steel cartel is launched. Prices on other steel products will be comparable. Right now Belgian and Luxemburg producers will join, but the Dutch are reluctant.

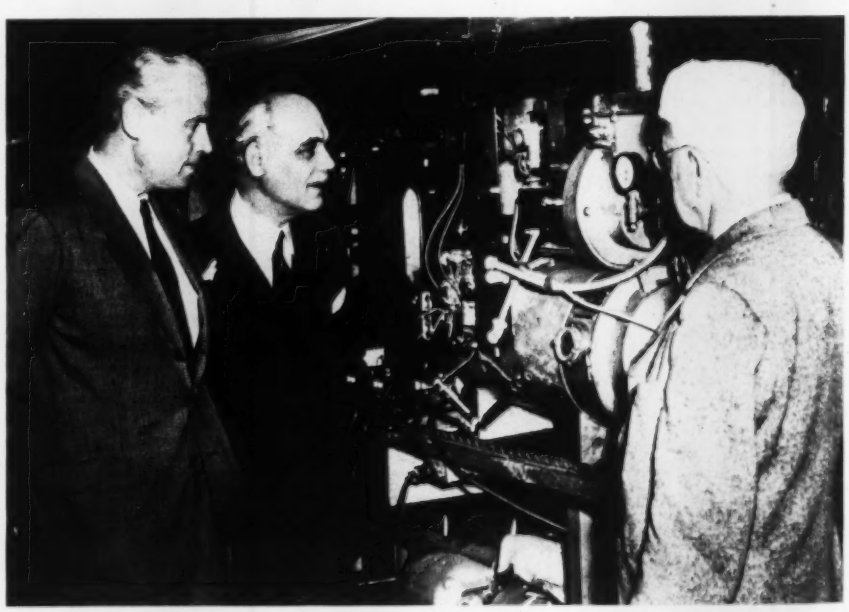
The Belgian metalworking industry is now employing about 153,000, up a little from the first of the year.

The general price level in Belgium is inching upward, although there are some surprising exceptions. Iron and steel scrap quotations are steady as are nonferrous prices. These prices are going up in France and Germany.

French Improvement Lags

Although French business is better, it's not improving as rapidly as in Belgium and Western Germany. That's because most of the upturn is caused by improved exports, and France is not yet geared to the export tempo that Belgium and the Ruhr are.

French delivery dates are far off, her metalworking products offered to the overseas trade sometimes dated. The Citroen, one of her major automobile models, has been



FOR THE WAGONS: Andre Widhoff, assistant director general, and Albert Pillepich, chief engineer, of Cie Internationale des Wagons Lits Grand Express Europeens, Paris, look over a new compact Vapor hot water heater with O. A. Rosboro, vice president in charge of foreign sales for Vapor Heating Corp., Chicago. Since European sleeping cars are equipped with three kinds of heating systems using electricity, hot water and steam to use as the cars pass through different countries, the new oil fuel hot water heater is going to be tried as a means of using only one system. Cie Internationale owns and operates sleeping and dining cars all over Europe

changed but little in the past ten years.

French wholesale and retail prices are firmer, but they are still about 10 per cent higher than they were a year ago.

ECA will grant $4.6 million for the purchase of machine tools, tooling equipment and tractor parts for a French affiliate of International Harvester Co., Compagnie Internationale des Machines Agricoles. The French company operates plants at Croix and Montataire and plans to purchase, rehabilitate and equip a third plant at Saint Dizier. In addition to ECA funds, the project will be financed with non-ECA dollars amounting to $2.8 million, of which $1 million will be a loan from International Harvester.

As a result of the projects, the annual production of tractors will be increased by 7500 units. Output of other farm implements will be expanded by 30,000 tons annually.

British Operate at Capacity

The British steel industry continues to operate at capacity. Demand is so heavy that steel producers expect to go on at that pace well into 1951.

Since the beginning of the year 85 per cent of all automobiles produced have been exported. Shipbuilders, locomotive manufacturers and foundrymen are all operating at or near capacity. About half the shipping tonnage is for tankers. Most of the railroad equipment business is for export. Least active are foundries turning out light products because the building industry is working way below par. Severe restrictions remain on private construction.

May Up Aluminum Output

Norway hopes to boost its aluminum production to 90,000 tons per year. Last year the Scandinavian country produced only 35,000 tons. Output this year will be boosted to 46,000 tons and gradually raised to the 90,000 figure. Expansion programs are planned at Holmestrand, Hoyanger and Sunndalsoyra.

Caterpillar Looks Up and Over

Caterpillar Tractor Co. expects a continued high rate of sales in overseas markets in 1950. So states a special report of the company's export division.

The forecast is based on an intensified sales effort now being made to increase volume through direct sales promotion and new dealer organizations abroad and through heavier advertising of Caterpillar's products.

The report points out that difficulties in selling heavy machinery abroad are increasing. Competition from foreign machinery producers is increasing steadily. More than 20 European firms are now building track-type tractors.

Currency devaluation also has made Caterpillar's equipment more costly in many countries in competition with European firms. However, Caterpillar reports that demand has continued to exceed the supply of its products. Dollar volume of the company's exports in 1949 were 4½ times greater than in 1939 and about three times larger than in 1946.

Economic Survey of Philippines

An American Economic Survey Mission, appointed by the President late last month, left Washington for Manila. The mission will survey the entire Philippine economic situation and make recommendations on measures of self-help and on ways and means for the U. S. to be helpful.

Chief of the mission is Daniel W. Bell, a former undersecretary of the treasury. Deputy chief of mission is Maj. Gen. Richard J. Marshall, superintendent of Virginia Military Institute. The men who arrived in Manila early last week are the president's personal representatives.

Columbia Starts Two Furnaces

Columbia Steel Co., U. S. Steel's West Coast subsidiary, has placed two small open hearths back in operation at its Pittsburg, Calif., plant in an attempt to meet mounting western demand for steel products.

The two units were part of the Pittsburg foundry which was closed by Columbia last year. The open hearths had remained inactive until early this month when they were placed in operation again. Each has a capacity of about 25 tons daily.

As a result of this resumption Columbia's Pittsburg plant is operating at 106.8 per cent of capacity.

1950: Year for Steel Production Records

JOE STALIN and his satellites might ponder these figures. American steel producers have just completed the best six-month, the greatest quarter and the largest June production on record.

Output for the first half totaled 47,106,141 tons. Production in the second quarter was 24,895,488 tons. June output was 8,130,929 tons.

For the first time in history, steel output exceeded 8 million tons in every month of the quarter, says the American Iron & Steel Institute.

The record half year yielded about 1,200,000 tons more steel than in the first half of 1949.

Second quarter output was nearly 2.7 million tons larger than in first quarter of this year, nearly 3 million tons higher than in second quarter of 1949 and about 800,000 tons higher than in first quarter of 1949, the record quarter previously.

The steel made in June, while 421,000 tons below the record 8,551,887 tons made in May, was about 1,626,000 tons larger than the output of June 1949.

Steel Employment Rises

Employment in the iron and steel industry in May reached the highest level in a year, at 628,200. That was an increase of 7100 over April. It was the largest monthly increase since employment began to recover from the decline of a year ago, says the American Iron & Steel Institute.

The industry's total payroll in May was $199,905,000, the highest monthly figure since March 1949.

Hourly payments to wage earners in May averaged $1.722, a record by a slight margin over the previous high average of $1.721 in November 1948.

Hourly wage payments in the first four months of 1950 averaged $1.707. Wage earners worked an average of 39.7 hours a week in May, an increase of 1.2 hours over April and the highest since March 1949.

Period	—Open-hearth— Net Tons	% Capac.	—Bessemer— Net Tons	% Capac.	—Electric— Net Tons	% Capac.	—Total— Net Tons	% Capac.	Calculated Net Tons Weekly	No. weeks in mo.
1950										
Jan.	7,131,519	96.5	379,252	80.6	419,601	71.9	7,930,372	93.9	1,790,152	4.43
Feb.	6,142,178	92.0	255,565	60.2	395,502	75.0	6,793,245	89.1	1,698,311	4.00
Mar.	6,747,680	91.3	265,726	56.5	473,630	81.1	7,487,036	88.7	1,690,076	4.43
1st Qtr.	20,021,377	93.3	900,543	65.9	1,288,733	76.0	22,210,653	90.6	1,727,111	12.86
Apr.	7,314,733	102.2	407,909	89.5	490,030	86.7	8,212,672	100.4	1,914,376	4.29
*May	7,597,837	102.8	437,006	92.9	517,044	88.6	8,551,887	101.2	1,930,449	4.43
†June	7,217,002	100.8	406,944	89.3	506,983	89.7	8,130,929	99.4	1,895,321	4.29
†2nd Qtr.	22,129,572	102.0	1,251,859	90.6	1,514,057	88.3	24,895,488	100.4	1,913,566	13.01
†1st Half	42,150,949	97.7	2,152,402	78.3	2,802,790	82.2	47,106,141	95.5	1,820,879	25.87

Note—The percentages of capacity operated are calculated on weekly capacities of 1,668,287 net tons open hearth, 106,195 net tons bessemer and 131,786 net tons electric ingots and steel for castings, total 1,906,268 net tons; based on annual capacities as of January 1, 1950 as follows: Open hearth 86,984,490 net tons, bessemer 5,537,000 net tons, electric 6,871,310 net tons, total 99,392,800 net tons.
* Revised. † Preliminary figures, subject to revision.

Windows of Washington

By E. C. KREUTZBERG — *Washington Editor, STEEL*

Industry pool pension plans, thinks NLRB Counsel Robert Denham, would require payments of about 32 cents an hour. They would foster unrealized burdens on employers

PENSION PLANS are one thing, pension pools another.

At least that's the thinking of Robert N. Denham, general counsel of the National Labor Relations Board. Manufacturers faced with union demands can be assured that as long as Mr. Denham continues as NLRB counsel, he won't use his discretionary power under Section 10 (j) of the Taft-Hartley Act to influence them into such agreements.

Prospects—Ever since the United Auto Workers—CIO signed up some 60 companies in the toolmaking business around Detroit for an area pension pool, other small employers have been faced with prospects of area pension pools. The UAW and about 125 employers in the Toledo industrial area are thrashing out the problem right now. Toledo employers are putting up a stiff fight.

Huzzas — Denham was the man who prevented General Motors from unilaterally putting into effect its revised "Social Security Program." Instead he required the company to bargain with the UAW on subjects in the program. Then the company and the union negotiated the agreement that has been widely huzzaed as assuring peace between the two parties for five years. Said Mr. Denham: "I can't help but feel that the rest of the industry and the rest of labor can very well afford to take a leaf out of the books of the UAW and General Motors."

Rewards—Mr. Denham thinks pensions are rewards for faithful and continuous service rendered to employers. "And as long as that criterion prevails," says he, "our pension plans will not be too great a burden on our economic structure. Many concerns for years maintained such pension plans on a sound actuarial basis. Their cost, measured against the full payroll, the turnover of employment and the fairly constant percentage of employees who stay out the allotted time, is fairly well determinable."

Obligations — The industry pool plan generally provides that each employer pay 8 or 10 cents an hour per employee into the pool. The stipulation is that no employee shall lose his pension rights if he should leave one employer and go to another within the pool. That, says Mr. Denham, "places the pension on the basis of an obligation of society to the pensioner—and it fastens a burden on the employer members of the pool that may not yet be fully realized. Such a plan cannot be funded with 8 or 10 cents per hour; its cost probably would require payments of about 32 cents an hour."

ROBERT N. DENHAM
". . . 32 cents an hour"

Work Stoppages High in May

New work stoppages numbered 450 in May, an increase of 12½ per cent from the 400 beginning in April, the Labor Department's Bureau of Labor Statistics estimates from its preliminary figures.

Stoppages in May also involved more workers than in April. Most of the May stoppages were brief. Strike idleness declined to 3 million man-days a 5 per cent drop. The drop in strike idleness was largely accounted for by the settlement ending the stoppage of 95,000 Chrysler employees on May 4. The stoppage of railroad firemen from May 10 to 16 involved four major railroads and resulted in the idleness of 150,000 workers. About 200,000 construction workers were involved in strikes in the Denver and Los Angeles areas. The stoppages began on May 1 and continued through the whole month.

The work stoppage record for the first five months of 1950 indicates about the same number of stoppages as in like periods of 1948 and 1949.

More Spending, It's Official

The United States government spent only $110 million more in the fiscal year ended June 30 than it did in the previous fiscal year.

That figure was revealed by the statement on the budget results for the last fiscal year released by the Treasury Department. Net receipts for the year just ended, Treasury Secretary Snyder says, amounted to $37,045,000,000 as compared with net receipts of $38,246,000,000 for the fiscal year 1949.

How much are we slipping into the hole? The budget deficit for the fiscal year 1950 amounted to $3,122,000,000 as compared with a deficit of $1,811,000,000 for fiscal 1949.

The secretary says the deficit is accounted for almost entirely by the reduction of $1,201,000,000 in net budget receipts. The deficit for fiscal 1950 is $2411 million less than the deficit estimated by the President.

Procurement Information

Interested companies can get much better information about procurement through the Commerce Department's Small Business Division. It is compiling daily reports on all military contracts involving $25,000 or more. They're available at Commerce's field offices, chambers of commerce, libraries and trade associations. The information is assembled into a daily "Consolidated Synopsis of Invitations To Bid."

Fred Hollowell, former information officer with the Interior Department, has set up U. S. Bid Information at 3603 R St. N. W., Washington 7, to send the information directly to manufacturers.

Walker: R & DB Secretary

Dr. Eric Walker will become executive secretary, Research and Development Board, Washington, Aug. 1. He will succeed Dr. Robert F. Rinehart. Dr. Walker will be on leave from Pennsylvania State College where he is director of the Ordnance Research Laboratory and head of the Electrical Engineering Department. Dr. Rinehart will resume his work as professor of mathematics at Case Institute of Technology. Dr. Walker is well-known to industry as a con-

sultant to Doble Engineering Co., Mine Safety Appliances Co., Koppers Co., Colt's Patent Firearms Mfg. Co., and Pullman-Standard Car Mfg. Co.

Coking Coal Reserves Report

Initial reports of results from the intensive survey of coking coal reserves launched last year by the Bureau of Mines are approaching the final stage and should be ready for distribution in August or September. They will cover Cambria and Indiana counties in Pennsylvania, listing the reserves and indicating their locations on maps. Shortly after will come a similar report on Armstrong county, Pennsylvania. The survey will take in the entire Appalachian region, into Alabama.

Needed: Large Master Containers

Development of large master containers for many agricultural products, particularly those that are now largely retailed in consumer-sized packages, is a No. 1 requirement on the agenda of the Transportation Advisory Committee. The committee wants master containers sufficiently rugged to get these products to market with minimum shipping damage and loss. Committee members will expand their studies of packing methods and smaller containers for fresh fruits and vegetables; preliminary studies on lettuce, celery, peaches, beef, eggs, watermelons, cantaloupe, citrus, and carrots indicate that improvements can be made in this field. Plans are to extend the studies to other commodities this year.

Following the experimental results indicating the possibility of reducing refrigerating and heating costs and increasing the efficiency and dependability of railroad cars for the shipment of perishable products, the committee called attention to the need for development of lighter-weight bodies and refrigerating units for motor trucks.

Those were the highlights of a meeting just held by the committee with the Agricultural Research Administration in Washington. Chairman of the committee, operating under authority of the Research and Marketing Act, is Lee J. Quasey, commerce counsel, National Livestock Producers Association, Chicago.

Welders Still a Static Problem

Manufacturers of electric welding equipment generating low radio-frequency power advised the Federal Communications Commission they are not prepared at this time to produce apparatus that will meet the commission's limit of permissible radiation. Further study, they reported, will be needed to design welding units that can be operated with less than the present interference with radio reception.

Equipment involved in the discussion generates radio-frequency of 500 watts or less. It may be operated without license outside of the three frequency bands assigned to medical diathermy and miscellaneous industrial apparatus, provided it generates maximum radiation of 15 microvolts per meter at a distance of 1000 feet from the apparatus. The problem is in the hands of an industry committee of which W. W. Reddie, Westinghouse Electric Corp., is chairman. At the request of the committee, to give more time for study, the date of application of the rule to welding equipment has been postponed to Jan. 31, 1951. Industry spokesmen believe some modification of the rule may be needed to make it practical for welding equipment.

If you want to read the rule, you'll find it in *Federal Register* of April 14, 1950 under the title "Federal Communications Commission, Part 18—Rules and Regulations Relating to Industrial, Scientific, and Medical Services."

No Industrial Mineral Storehouse

If Alaska is a storehouse of industrial minerals, latest production statistics of the Bureau of Mines fail to reflect such promise.

Output in 1949 comprised 74 tons of concentrate containing 87,780 pounds of metallic antimony, 100 flasks of mercury, 80 long tons of tin concentrate containing 52 long tons of metallic tin, 51 short tons of lead, 4 short tons of copper and 2 short tons of zinc.

Crude platinum metals were produced in "substantial quantity" but no figures are reported. Major industrial mineral is bituminous coal and lignite of which 455,000 tons were produced. A small quantity of tungsten — no figures given — was produced. No recorded production of asbestos, chromite, or petroleum took place in 1949. As usual biggest metallic mineral output was for gold, of which 229,416 troy ounces were produced, silver following with 36,056 troy ounces.

Atomic Reports Easier To Get

American business firms will have easier access to non-secret atomic energy technical reports under a new distribution plan by which the Commerce Department's Office of Technical Services becomes the sales agency and reference source for publications released by the Atomic Energy Commission. As before, *Nuclear Science Abstracts*, issued twice monthly, will continue the principal medium through which business firms may learn about atomic energy reports. The price is $6 a year; if you want a subscription, write to the Office of Technical Services, Commerce Department, Washington 25.

Rare Minerals Get More Study

Investigation of rare earths and minerals will be stepped up when the Bureau of Mines obtains the new rare and precious metals experiment station, authorized by Public Law 568 just signed by the President.

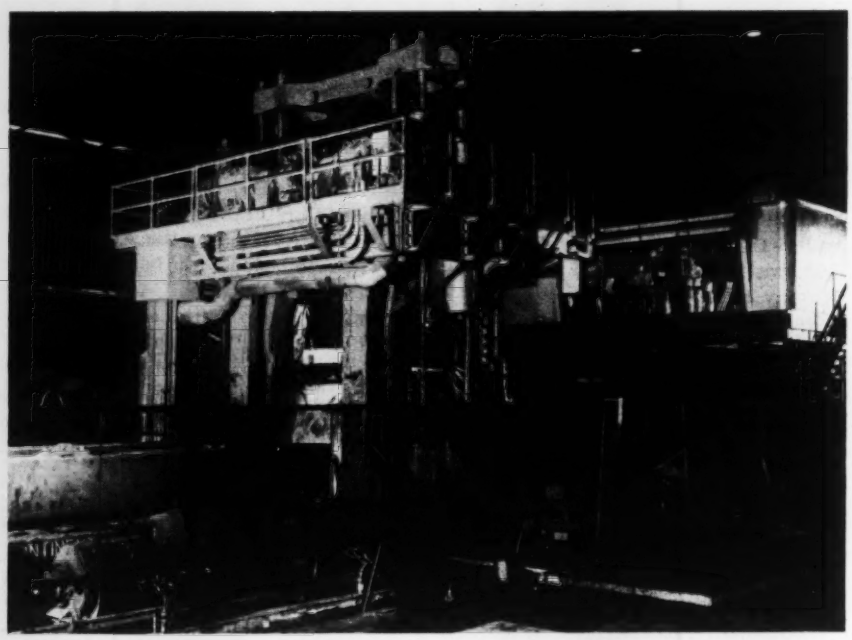
The plant is to be built at Reno, Nev.; it needs an actual appropriation before it can be started. Work on rare materials continues to be carried on as before by a small staff located in a building of the University of Nevada.

While the mining station principally has been engaged in the past on gold and silver, it has increasingly studied other metals and minerals. It now is investigating a cerium-bearing mineral known as Bastnaesite, obtained from a California deposit under development by Molybdenum Corp. of America. The station also is investigating minerals of interest to the Atomic Energy Commission. Its scientists plan to study many minerals that contain such elements as zirconium, tantalum, indium, barium and others with present or potential significance as alloying materials.

Hartley Organizes Own 'PAC'

Fred A. Hartley Jr., former Republican congressman from New Jersey, co-author of the Taft-Hartley Act, is organizing a "Free Workers Political Action Committee," to represent "those who want to be free of domination by big business, big labor, big government."

His will be a political action committee "to provide a voice for the millions of Americans whose political thinking is right of center." Specifically, the proposed organization is intended to balance off the CIO's Political Action Committee and the AFL's Labor League. Mr. Hartley makes his headquarters at 1001 Fifteenth St. N. W., Washington 5.



The McLouth blooming mill consists of two large steel housings supporting a pair of rolls driven by two 3000 horsepower electric motors

McLouth: Unconventional Strip Supplier

His Trenton plant takes an ingot from the soaking pits, runs it through a bloomer down to ⅝ inch, then a reversing mill without reheating to squeeze it to automotive gages

MANY a veteran steel man snorted when he heard that Donald B. McLouth planned to build a steel plant capable of producing 400,000 tons a year for only $25 million.

After all, wasn't the figure for new steel capacity something like $300 a ton? That would call for $120 million. And another thing—how was he going to take a 26 x 44-inch ingot from the soaking pits, run it through a bloomer and down to ⅝-inch thickness, keep it hot enough to put through a reversing mill without reheating and squeeze it down to automotive gages? Also, what would happen when the price of scrap hit the stratosphere? The whole thing was a foolhardy McLouth "project."

Out of the Marshes—Today, out along the banks of the Detroit river at Trenton, Mich., the McLouth plant is running smoothly in contrast to three similar plants started in other sections of the country about the same time. Day and night seven days a week at Trenton endless miles of hot-rolled strip steel stream from the continuous pickler to shears and coiler; almost immediately they go to truck trailers that rush it to the hungry automotive plants within a 75-mile radius. The mill that rose from the marshes within 16 months is rolling strip at the hot pace of 25,000 tons a month.

Lanky and affable, 48-year-old McLouth is president of McLouth Steel Corp. He started in the steel business in Detroit with a single truck—back in the days of the depression. He built a small warehouse business into a major automotive steel strip supplier. He's operated his big new plant at 100 per cent of capacity when others were down to 60.

Turn of Talent—Partly responsible for the smooth-running operation is Paul Lindberg, ex-metallurgist who decided to turn his talents to electric furnace melting. He's pushing out 80-ton heats from four 60-ton electrics every 4½ hours. If he can get big enough ladles, he'll make that 90 tons each. Most heats are the rimmed type, although in the higher carbon ranges, he is making semikilled and hot-top ingots.

The Trenton melt shop is a beauty, 110 feet from furnace floor to the roof peak and probably the highest of its kind anywhere. The height permits good dispersion of smoke and fumes from the electrics, particularly during the initial meltdown. Furnaces are set 20 feet above ground level and are of the front-charge type. Buggies loaded with scrap are shunted back and forth along a track in front of the furnaces; their loads are dumped by conventional charging machines.

McLouth is thinking of changing the furnaces over to a top-charge design. The idea is to boost production about one-third. Considerable time now is involved in loading, spotting and handling the charging buggies. That would be eliminated with the use of a drop-bottom bucket handled by overhead crane.

Efficient, Fast, Unconventional—Prize piece of equipment in the rolling mill is the bloomer. It will take a 26 x 44 ingot and roll it down to "slab" as thin as ⅝-inch and perhaps 300 feet long. This is highly unconventional blooming mill practice, but the equipment is so fast (it reverses in 1.7 seconds) that it can keep ahead of the present full electric furnace production of steel ingots.

Each blooming mill spindle is driven by its own 3000-hp motor. The usual setup is to have one motor drive both rolls through gearing.

Actually, present rolling speed is limited by the speed of the runout table rollers that goes up to 600 feet per minute. Thinking is being directed toward stepping up that figure some way.

As the bloom or slab runs out from the bloomer it is a simple matter to crop the ends in a shear just ahead of the blooming mill. That saves some work in the final passes. The shear is equipped with an adjustable shear gage if shorter lengths are desired.

A Matter of Minutes—The revers-

Charging machine deposits scrap into one of four 60-ton electric furnaces. Electrodes are in raised position

Manipulator turns over an ingot for its next pass through the bloomer

ing-type hot strip mill is directly beyond the crop shear and will turn out strip up to 39 inches wide. The mill is the four-high type with two backup and two work rolls. They are driven by a single 5000-horsepower motor.

On each side of the roll stand is an oil-fired furnace with a reel onto which the strip is wound—first to one side and then the other—as it is reduced in thickness to the desired gage.

Usually about seven passes are all that is necessary before the elongated strip is shot out onto a roll table with multiple quenching sprays. Then it goes to a coiler. From ingot to coiled strip is a matter of minutes.

Ribbon of Strip—Coils are transferred by a special conveyor arrangement to a continuous pickling machine 600 feet in length. They are first joined end to end by punching a series of triangular holes through overlapping ends and rolling down the projecting tabs. Thus a continuous ribbon of strip is going through the enclosed pickling machine. Ample footage is folded into a pit just ahead of the pickler to compensate for delays in getting fresh coils loaded and stitched. The pickler has a series of high and low rollers over which the strip passes into and out of the succeeding pickling and washing solutions.

Emerging, it next goes through oiler rolls and then a shear that trims out the sections where the coils are "stitched" together.

Wound again into coils, the strip is strapped and placed on a cross conveyor which transfers it to an adjoining shipping department building. Here a complete assortment of rotary shears, slitters and other finishing equipment prepares the material to customer specifications.

Some coils are roller leveled and cut to short lengths for shipment in flat bundles. Others are slit to three or more widths, each coiled and strapped separately. As tonnage has moved up, additional space has been required. A 200-foot extension is being erected at one end of the shipping building.

Automakers and RFC—Financing of the Trenton plant was somewhat unconventional. A group of large automotive customers chipped in $8 million in 4 per cent second mortgage 10-year notes. Reconstruction Finance Corporation lent McLouth another $14.5 million in first-mortgage notes.

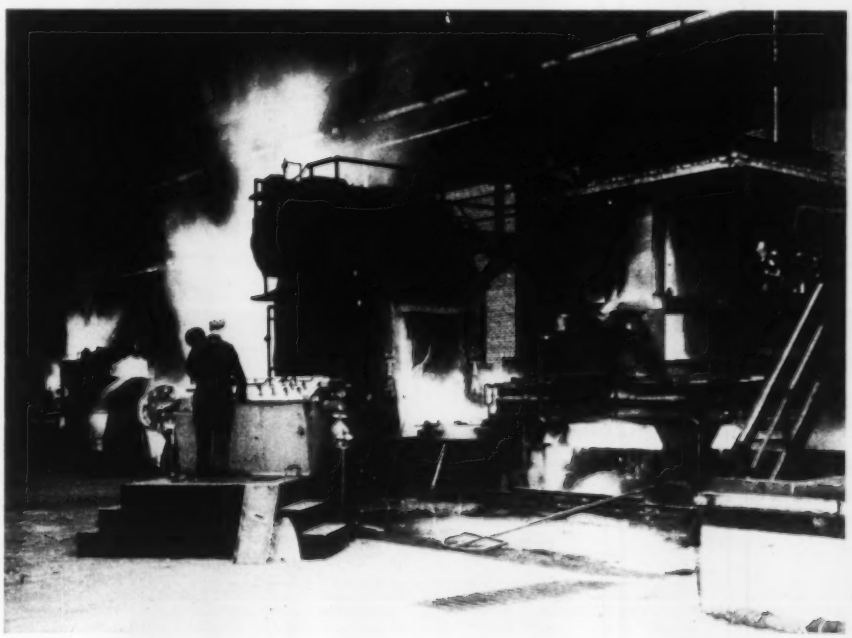
They have to be paid off quarterly at a minimum rate of $1.45 million this year and next, then $2, $2.5, $2.9, $2.9, $2.9, $2.1, $2.1 and $2.2 million through 1959. McLouth Steel must make principal payments based on earnings so total debt retirement each year equals 50 per cent of net earnings before depreciation, and the company can make no capital expenditures for plant or equipment in excess of $250,000 without noteholders' approval. It must obtain similar approval for dividend payments.

Whether this will prove a sounder way of financing than the issuance of more stock or bonds would depend, it appears, on the market for McLouth's strip and sheet over the next ten years. M. A. Cudlip, vice president and treasurer, thinks it will pan out nicely.

First Crack—The Detroit automotive group which put up the second-mortgage money naturally gets first crack at the mill's hot strip. Right now this has been a bonanza. General Motors divisions, for example, take directly about 40 per cent of McLouth's Trenton production, and indirectly through suppliers an additional tonnage. Briggs, Ford and American Metal Products are supposed to be other participants in the pool.

Employment at the Trenton plant is 670. Another 830 are employed at the Detroit plant which has a monthly turnout of approximately 1500 tons of stainless, 6000 tons of cold-rolled and 8000 tons of hot-rolled strip and sheet.

Master Minds—Much of the credit for master-minding the layout and construction of the Trenton plant is given to Ivor Bryn, vice president in charge of operations, who came to McLouth a number of years ago from Otis Steel Co. Lou R. Moultane, vice president and secretary, heads up all sales activity and supervises the purchase of scrap. While he hasn't much to do these days from a selling angle, he acknowledges that time will come and is laying plans accordingly. Being on a deep-water channel with plenty of room for large dock space suggests that some day McLouth can reach out profitably for customers anywhere along the Great Lakes industrial area.



The 4-high reversing strip mill rolls slab from the bloomer down to strip that is up to 39 inches wide. Furnaces are located on either side of the mill stand into which the strip is fed and reeled on each pass. About seven passes are required normally to work the steel down to automotive gages

Why we were *Pleased* to receive a . . .

CANCELLATION

The customer purchased five new Bullard Cut Masters. We shipped three; then the remaining two were cancelled. But not because the Cut Masters did not perform as expected!

Quite the Contrary. . . .

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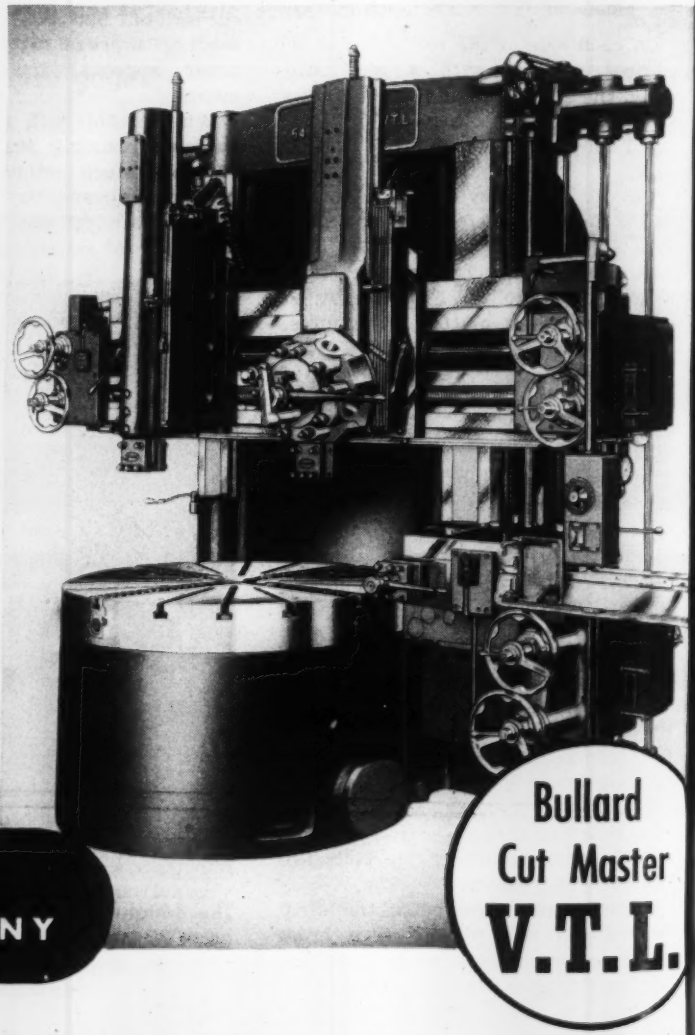
Maybe you're paying For a Cut Master . . . without getting its . . . . . *benefits* . . .

Right now you are more than paying for a Cut Master if you own an outmoded machine that is slower than a Cut Master . . . if you use several machines for work which fewer Cut Masters could do . . . if you occasionally lag in producing needed parts, thereby keeping revenue-producing equipment in the shop too long.

So if you are *paying* for a Cut Master, why not have a Cut Master! Talk it over with the Bullard engineer, a practical man who knows your problems and can help solve them. Write Bullard today, for sure.



THE **BULLARD** COMPANY

BRIDGEPORT 2, CONNECTICUT

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Military services inquiring for "machine shop" layouts, plans and quotations on "if and when" basis. Equipment suppliers kept busy checking on reported building

DETROIT

SOURCES close to the industrial construction field say there has been an appreciable influx of requests from the military services for layouts, plans and quotations on assorted sizes of new plant projects, all carrying the cryptic indentification of "machine shop" and no locations specified. Requests for plans of course do not insure actual construction, more probably they simply mean an accelerated program for facilities to handle war materiel, "just in case" they should prove to be needed. However, the projects do take precedence over regular civilian jobs and could react toward a slowing down of building programs near the engineering stages, and these are numerous.

The matter should bear watching by equipment suppliers since these "military" buildings will have to be fitted out with something, although chances are few of them will prove to be "machine shops."

On the automotive plant erection agenda, one of the largest items is a major adidtion to the Chrysler Corp. Nine-Mile press plant, for which structural steel was due to be placed last week. This building is turning out to be something considerably larger than first indicated, reportedly covering an area of 300 x 1200 feet, or about as much space as the original structure on the site. It is further understood operations will not involve additional press equipment, but rather assembly work, suggesting that Chrysler may be planning to extend its Detroit-area car assembly capacity in this new location at East Nine-Mile and Mound roads.

Nash Defers Action on NXI

Despite expenditure of "millions of dollars extra on conversion steel" Nash-Kelvinator Corp. still cannot get enough to satisfy its production planning, according to George W. Mason, president. Hence it has been necessary to defer final decision on whether to put the company's small $1000 NXI model into production. Meanwhile, however, engineering work is proceeding up to the point of tooling and production, with prototypes nearing completion. The latter incorporate some modifications from the original design, based on 250,000 replies to a national cross-section survey of public opinion made several months ago. Changes are aimed at increasing the utility of the vehicle, while keeping within the $1000 price limit. Tread and wheelbase, originally 47 and 84 inches, respectively, have been increased slightly, and a single-unit front seat for three passengers substituted for the divided two-passenger seat. None of the other alterations involve style or appearance which rated highly favorable to well over 90 per cent of those replying to questionnaires.

Assembly schedules on the Nash Ambassador, Statesman and Rambler series are holding to a high level, May yielding about 20,000, June 19,000 and projections for July aiming at 17,000.

The Nash Rambler, now being built in convertible and station wagon types, is not being pushed strongly as yet. Few are seen on the highways and the company is feeling its way slowly on this small-car deal, preferring to get a sure test of public demand before shooting ahead with production.

War on Car Bootleggers

New car "bootlegging" is being vigorously attacked by the National Automobile Dealers Association which is enlisting the aid of its members, as well as manufacturers, to halt the practice of allowing new cars to get into hands of nonenfranchised dealers for resale to the public at cut prices. Maldistribution seems to be the principal reason for overstocks of new cars in some areas and resultant bootlegging.

Uses Color Effectively

Ford's new custom sports job, the Crestliner, announced a week ago, has unusual paint treatment on the body sides in the form of an "airfoil" panel of jet black which covers most of the front fender, three quarters of the door and extends well into the rear side panel. It is outlined with a narrow border of stainless steel molding. Name, in the form of a gold-colored die casting, is attached to the side of each front fender. Top is covered with a black basket weave vinyl plastic, cemented to the steel base. Full chrome-plated wheel disks, with circular depressions painted

CRESTLINER: Ford's two-toned sports sedan, latest addition to the line, has a black basket weave vinyl top and airfoil custom paint panels. Its fender skirts, rear view mirrors, full wheel disks, four-spoke steering wheel and custom interior are standard equipment

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black, are standard equipment as are rear fender skirts and two side-view mirrors. A protective and decorative molding of polished stainless steel extends along the bottom edge of the body. Interior trim carries out the striking two-tone effect of exteriors, with black instrument panel, black grained leather headlining and black carpeting contrasting with lighter body colors used on garnish moldings and other trim details. The basic body contours and window arrangements are unchanged from standard models.

Chevrolet Builds Million

One million cars and trucks built in six months—that is the latest and greatest production record to be hung up by Chevrolet. The milestone was commemorated July 6 at the division's assembly plant at Norwood, near Cincinnati, when vehicle No. 24,000,000 rolled from the assembly line. No. 23,000,000 was completed Jan. 11. A second shift has been added at the Norwood plant which began operations back in 1923. Last year it assembled 111,614 unts, claimed to exceed the number built by any of eight other makes of passenger cars.

Records Topple in June

Final tabulations on sales and production figures for June show new highs through most sections of the industry: More DeSotos shipped than in any previous month, Ford truck sales highest in history and passenger car sales setting 20-year records, Buick sales for the year through June 30 totaling 45.3 per cent ahead of last year, Oldsmobile deliveries hitting a new all-time high in the last ten-day period of June to bring the monthly total to 35,996, exceeded only by March, Pontiac breaking all monthly records by building 47,020 units.

Oldsmobile smashed every production peak last month by building 39,567 units, thereby building up dealer stocks by about 3500, considered a trifling number. In the first half, 59 per cent of output was the Series 88 model, 28 per cent the 98 and 13 per cent the 6-cylinder 76, which will be discontinued as of Oct. 1. Another interesting note is that in only four previous 12-month periods—1949, 1941, 1940 and 1937—were more cars built than in the first six months of this year by the Lansing manufacturer.

Ford's car and truck sales last month exceeded shipments from assembly plants, reducing dealers' passenger car stocks as of July 1 to 6667 units for about 6500 dealers, or little more than one per outlet, and cutting truck inventories from 27,000 to 25,000, or the equivalent of about a 20-day supply per dealer. A 30-day supply is considered desirable.

Assemblies for the holiday week ran considerably ahead of advance estimates, even though many plants were closed for the first two days of the week. Deficiency which would have resulted from subtracting about 40 per cent of a normal five-day week was reduced sharply by Saturday operations, thus bringing the revised total, U. S. and Canada, up to 142,548 according to checks by Ward's *Automotive Reports*. Last week the total headed back toward the 200,000 level where it held through every week in June.

Auto, Truck Output

U. S. and Canada

	1950	1949
January	609,882	445,092
February	505,593	443,734
March	610,678	543,711
April	585,705	569,728
May	732,161	508,101
June	890,000*	523,689
Six Months	3,934,019*	3,034,055
July		604,351
August		678,092
September		657,073
October		601,021
November		474,731
December		384,318
Total		6,533,641

Weekly Estimates

Week Ended	1950	1949
June 24	205,334	153,001
July 1	197,767	144,822
July 8	142,548	118,611
July 15	190,000	156,436

Estimates by Ward's Automotive Reports

* Preliminary.

Things Look Bright for Willys

The recent government orders for 8350 military Jeeps placed with Willys-Overland (STEEL, July 10, p. 56) are for a model further improved over the wartime Jeep on which production was started in 1941.

Known as the M38, it is designed to ford streams at depths completely submerging the vehicle; it can perform at maximum efficiency under extremely high and low temperature conditions. Equipment includes an electrical system adapted to operate short wave radio developed for tanks during the last war. A wider range of radio suppression to reduce field radio interference is another feature.

Now with a $43 million backlog in military orders, things look much brighter for the Toledo, O., producer. Willys saw its civilian business drop off rather sharply in the past two years. Another factor in the company's favor is a lively engine manufacturing schedule: For every three engines produced for vehicle installation an additional one is made for reserves in distributor and dealer hands throughout the world.

A check over the last ten years shows 800,000 Willys-made vehicles sprinkled over the globe. It is not known for sure just how many are operative, though.

More engine business accrues from Kaiser-Frazer which is using the Willys designs in its new Henry J model now in its preliminary manufacturing stages. Schedules on the latter are pointing to a 400 a day as soon as possible. Delays are being encountered in deliveries of key parts.

One delay was caused by the strike called ten days ago at the Warner Gear Co., supplier of transmissions.

GM Special Meeting Sept. 27

Early last week General Motors Corp. directors voted to recommend the stock split that was talked about several months ago.

The stockholders will be asked to vote at a special meeting to be held Sept. 27. GM directors are recommending that the certificate of incorporation be amended to increase the authorized shares of common stock from 75 million shares of $10 par value to 150 million shares of $5 par value and to provide for the issuance of two shares of the new $5 par value common stock for each share of $10 par value common stock presently issued.

At the meeting the stockholders will also be asked to approve the recently announced pension plan for hourly rated employees.

Dodge Brings Out 'Sportabout'

Restyled and improved version of the Dodge Roadster, introduced a year ago, now is being shipped to dealers and has been rechristened the Sportabout. Alterations in the body have been made to give more usable space, front seat now is of the split type, top has aluminum frame with fabric covering, raised or lowered by engine power. Factory price is $1635.

Apparently the original Roadster model did not meet the public approval which had been expected and the decision was made to "fancy" it up a bit to overcome objections.

ARISTOLOY STEELS

HIT THE MARK

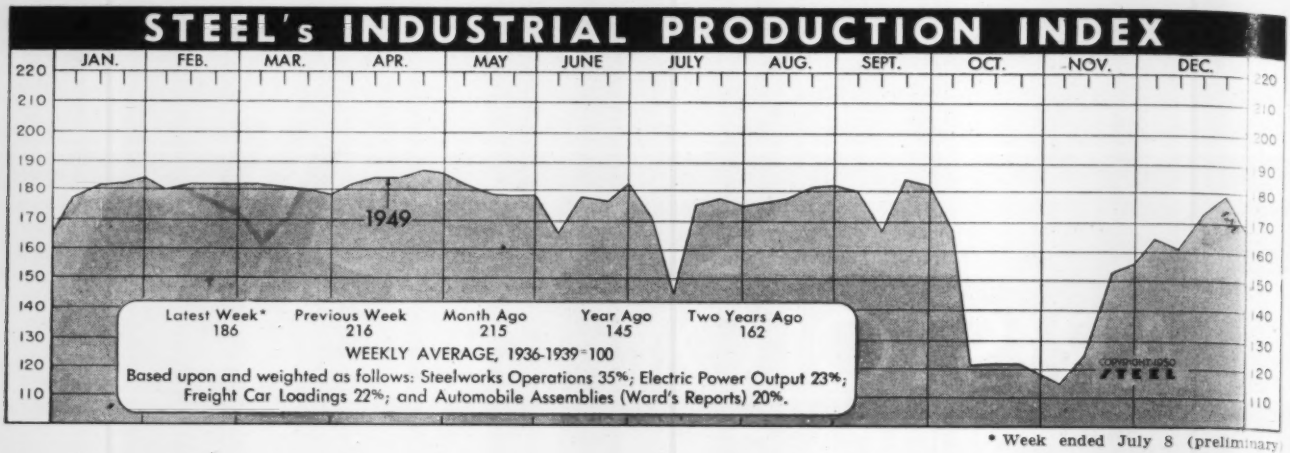
Cold finished bar steel is available in practically all types of analyses in three different finishes—cold drawn, turned or ground.

ARISTOLOY STEELS

STANDARD STRUCTURAL ALLOY
BEARING QUALITY • ALLOY TOOL
SPECIALTY • NITRALLOY
CARBON TOOL • STAINLESS
MAGNAFLUX– AIRCRAFT QUALITY

COPPERWELD STEEL COMPANY, WARREN, OHIO

117 Liberty Street, New York, New York
176 W. Adams Street, Chicago, Illinois
P. O. Box 1633, Tulsa, Oklahoma
1578 Union Commerce Building, Cleveland, Ohio
7251 General Motors Building, Detroit, Michigan
403 W. Eighth Street, Los Angeles 14, California
528 Fisher Building, Detroit, Michigan
3104 Smith Tower, Seattle, Washington
Monadnock Building, San Francisco 5, Calif.


STEEL's INDUSTRIAL PRODUCTION INDEX
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110
1949
Latest Week* 186
Previous Week 216
Month Ago 215
Year Ago 145
Two Years Ago 162
WEEKLY AVERAGE, 1936-1939=100
Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.
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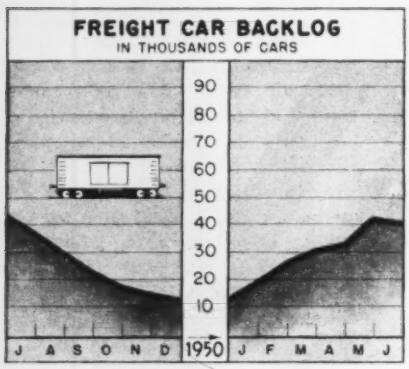
* Week ended July 8 (preliminary)



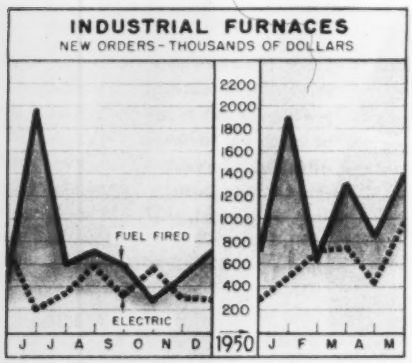
Charts—Copyright 1950, STEEL

Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1950	1949	1950	1949
Jan.	9,385	1,663	19,026	96,214
Feb.	9,075	332	26,055	85,974
Mar.	6,201	199	30,539	73,188
Apr.	3,308	30	32,857	62,569
May	11,636	589	42,300	52,281
June	2,195	153	40,585	42,813
July	....	408	.....	36,564
Aug.	....	185	.....	28,731
Sept.	....	123	.....	22,203
Oct.	....	201	.....	17,377
Nov.	....	1,145	.....	14,146
Dec.	....	1,220	.....	12,036
Total	....	6,248		

*End of month.

American Railway Car Institute

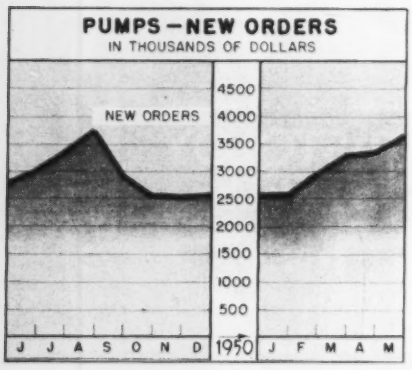

INDUSTRIAL FURNACES
NEW ORDERS - THOUSANDS OF DOLLARS
2200 2000 1800 1600 1400 1200 1000 800 600 400 200
FUEL FIRED
ELECTRIC
J J A S O N D 1950 J F M A M

Industrial Furnaces

New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1950	1949	1950	1949
Jan.	1,914	1,047	473	948
Feb.	616	636	697	402
Mar.	1,299	305	753	436
Apr.	837	322	415	543
May	1,392	438	982	762
June	....	1,978	...	196
July	....	594	...	329
Aug.	....	706	...	589
Sept.	....	589	...	318
Oct.	....	269	...	565
Nov.	....	464	...	293
Dec.	....	718	...	281

* Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.



Pumps, New Orders

In Thousands of Dollars

	1950	1949	1948
Jan.	2,586	3,390	3,819
Feb.	2,938	3,247	3,635
Mar.	3,313	3,593	4,703
Apr.	3,376	2,699	4,312
May	3,668	2,775	3,724
June	....	3,019	3,512
July	....	3,358	4,075
Aug.	....	3,767	4,520
Sept.	....	2,914	3,474
Oct.	....	2,539	3,571
Nov.	....	2,525	3,580
Dec.	....	2,560	4,263
Total	....	36,386	47,188

Hydraulic Institute

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Construction June26	Indus. Prod. July10	Steel Cast. May29
Durable Goods June5	Malleable Iron June26	Steel Forgings June5
Employ., Steel June19	Machine Tools June26	Steel Shipments ...June26
Employ., Metalwkg.June19	Price Indexes May1	Trucks, Elec. Ind...Jan.2
Foundry Equip. July10	Purchasing Power..June12	Vacuum Cleaners ..June5
Furnaces, W. Air..May8	Ranges, Elec. June26	Wages, Metalwkg...June19
Gear Sales July10	Ranges, Gas July10	Washers July10
Gray Iron June5	Refrigerators June26	Water Heaters.....July10

Holiday Forces Index Drop

All four components that make up STEEL'S industrial production index declined in the holiday-affected week ended July 8. The index declined to a preliminary 186 per cent of the 1936-1939 average from 216 in the preceding week. Largest declines came in automobile assemblies where many plants did not work the first two days and in electric energy distribution.

More Freight Car Activity

Preparations are being made to boost freight car production. Start of hostilities in Korea brought the need for more freight cars into the forefront. Railroads are taking steps to build up their fleets even before the government steps in and advises them to do so. Steel mills are being queried about the availability of tonnage to get programs going. Two leading eastern railroads are inquiring for enough steel to build 5000 cars each. Car building at the present time is below the peaks attained a year ago. The capacity is there but getting steel may be a little tough.

Freight car deliveries stepped up a little further in June as car builders output began to reflect this year's improved order volume. American Railway Car Institute says June deliveries totaled 3874, a fairly sizable improvement above May's 2193 but far short of the 9121 cars delivered in June, 1949, when car builders were working off heavy backlogs. It was the first time this year that deliveries exceeded orders placed during the month. Awards slipped to the lowest point this year and totaled 2195 with 1670 going to car builders and 525 to railroad shops.

Backlog on July 1 was: Car builders, 23,886; railroad shops, 16,699; total, 40,585. This compares with 42,300 on June 1 and 42,813 on July 1, 1949.

The Business Trend

Metalworking's products will be in strong demand for months to come but whether they will be predominantly for civilian or military use is the puzzler

STRONG demand for metalworking's end products is a certainty for months to come. Just what those end products will be is the question that no one can answer at the moment.

Buyers, particularly Joe Smith and his better half, have the jitters and many of them are hurrying to close deals for hard goods right now. The memory of waiting for appliances and hoping the old jalopy would hold together until a new one became available is bringing a lot of buyers into the market. A flood of rumors about plant conversions to military production is an added spur. Denials by the companies concerned have little effect.

Holding prices steady is a major problem. Some price advances are being put into effect by metalworking companies because of higher raw materials and labor costs but the rises are small and scattered.

It is a pretty safe bet that production in some lines of consumer goods will be squeezed unless the international situation improves considerably and rapidly. Both steel and the nonferrous metals will stay tight and price declines are very unlikely unless they result from government controls.

Steelmaking . . .

Special attention is being focused on the steel industry as it is the key to both civilian and military production. Even with operations above practical capacity in recent weeks steel remained in short supply. Any additional burden placed upon the steel industry will mean someone will get short changed. Last week the ingot rate gained a few points over the week ended July 8 when the rate dipped to 95 per cent of capacity. Scattered vacation closings kept the rate from rising any higher.

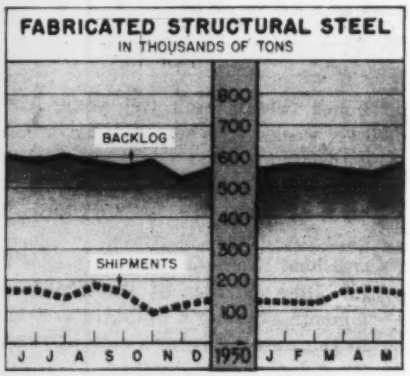
Automobiles . . .

Passenger car and truck builders are well on their way to the 5 millionth vehicle built this year. Almost two weeks ago some U. S. or Canadian plant rolled the 4 millionth vehicle from its assembly line. Assembly schedules call for a record daily pace in July but fewer work days will hold this month's total below that for June. Strikes at important components supplier's plants are a thorn in the auto industry's side at present. The future availability of steel is the cause of more than one set of ulcers acting up. Backlogs are growing for all auto makers as customers rush to get in under the wire with their orders.

Employment . . .

An answer to how tight will the labor market be if we start on a major rearmament program may be contained in a report compiled by Robert C. Goodwin, director of the Labor Department's Bureau of Employment Security. He says all signs point to a record breaking employment year and there is little doubt employment this year will exceed the 61.6 million high established in 1948. Total unemployment is expected to drop below the 3.4 million total for June. In other words there is no large

	LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
Steel Ingot Output (per cent of capacity)†	95.0	101.5	101.5	60.0
Electric Power Distributed (million kilowatt hours)	5,380	6,115	5,921	4,982
Bituminous Coal Production (daily av.—1000 tons)	1,694	1,740	1,548	217
Petroleum Production (daily av.—1000 bbl)	5,475	5,435	5,305	4,722
Construction Volume (ENR—Unit $1,000,000)	$214.4	$287.6	$226.7	$138.5
Automobile and Truck Output (Ward's—number units)	142,528	196,767	200,515	118,611
*Dates on request. †1950 weekly capacity is 1,906,267 net tons. 1949 weekly capacity was 1,843,516 net tons.				
Freight Car Loadings (unit—1000 cars)	720	783	796	595
Business Failures (Dun & Bradstreet, number)	138	156	164	153
Money in Circulation (in millions of dollars)‡	$27,315	$27,026	$27,079	$27,659
Department Store Sales (changes from like wk. a yr. ago)‡	+10%	+1%	+1%	+1%
†Preliminary. ‡Federal Reserve Board.				
Bank Clearings (Dun & Bradstreet—millions)	$13,047	$14,456	$14,360	$12,535
Federal Gross Debt (billions)	$257.2	$256.5	$256.2	$252.5
Bond Volume, NYSE (millions)	$16.0	$31.5	$27.1	$9.9
Stocks Sales, NYSE (thousands of shares)	6,374	17,099	9,542	3,573
Loans and Investments (billions)†	$68.0	$67.9	$67.1	$62.6
United States Gov't Obligations Held (millions)†	$36,665	$36,935	$36,456	$34,178
†Member banks, Federal Reserve System.				
STEEL's Weighted Finished Steel Price Index††	156.69	156.69	156.25	152.80
STEEL's Nonferrous Metal Composite‡	184.0	183.5	184.1	168.0
All Commodities†	159.0	157.1	157.4	153.1
Metals and Metal Products†	173.0	173.1	172.9	168.1
†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				

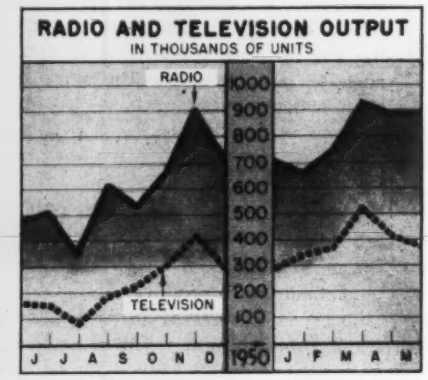


Fabricated Structural Steel

Thousands of Net Tons

	Shipments		Backlog	
	1950	1949	1950	1949
Jan.	135.2	152.7	565	675
Feb.	129.6	145.9	565	683
Mar.	156.8	185.9	556	582
Apr.	166.3	179.2	540	628
May	157.2	171.1	578	599
June	....	172.3	...	583
July	....	148.0	...	605
Aug.	....	183.9	...	583
Sept.	....	162.1	...	562
Oct.	....	99.8	...	584
Nov.	....	117.2	...	527
Dec.	....	135.5	...	555
Total	....	1,853.5	...	...

American Institute of Steel Construction

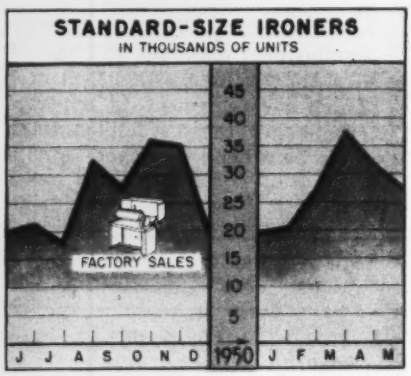


Radio and Television Output

Thousands of Units

	Radio		Television	
	1950	1949	1950	1949
Jan.	660	710	336	121
Feb.	750	598	367	119
Mar.	980	679	525	182
Apr.	883	506	420	167
May	883	478	376	163
June	...	512	...	161
July	...	342	...	80
Aug.	...	623	...	186
Sept.	...	532	...	225
Oct.	...	670	...	305
Nov.	...	910	...	414
Dec.	...	707	...	292
Total	...	7,247	...	2,414

Radio Manufacturers Assoc.



Standard-Size Ironers

Factory Sales—Units

	1950	1949	1948
Jan.	20,300	28,300	40,192
Feb.	27,600	28,400	51,651
Mar.	37,800	23,800	53,686
Apr.	31,600	18,100	47,319
May	27,400	19,500	44,954
June	.....	21,100	32,767
July	.....	17,700	26,679
Aug.	.....	32,300	35,203
Sept.	.....	27,700	37,308
Oct.	.....	36,045	38,517
Nov.	.....	35,000	42,000
Dec.	.....	19,400	26,000
Totals	..	307,345	476,860

American Washer & Ironer Mfrs. Assoc.

Charts—Copyright, 1950, STEEL

worker pool to draw from should civilian and military needs increase.

Prices . . .

Bureau of Labor Statistics' wholesale price index made its biggest jump in many months during the week ended July 3 as it moved up to 159 per cent of the 1926 average from 157.1 in the preceding week. Almost all commodities on spot markets were higher that week with food price rises holding a prominent spot. Scare buying is at least temporarily exhausting what should be plentiful supplies of many items and assisting the price advance.

Bituminous Coal . . .

There is no rush to buy bituminous coal by either industry or consumers. Stockpiles are growing even with mines working below capacity. Stocks on June 1 totaled 44,795,000 net tons. Industrial stocks equaled 42,840,000 tons or 41 days' supply on June 1. Days' stocks held by various industrial classifications were: Electric power utilities, 78; coke ovens, 35; steel and rolling mills, 42; cement mills, 37; railroads, 20; and other industrials, 47.

Engineering Awards . . .

Engineering construction contracts in June totaled $1253.7 million, an alltime record. The January-June total is $5665 million and is 44 per cent higher than a year ago and 15 per cent above the former record set in 1942. Private construction attained an alltime high of $728 million in June and public construction hit a peacetime high of $526 million.

Utilities Doing Fine

Electric energy consumption by industrial and domestic users grows and boosts earnings

ELECTRIC utility companies turned on new bright lights in sales and net earnings in the first half, and prospects are bright for the entire year. Net energy for distribution figures in recent weeks show the industry is selling more electric energy in mid-summer than it did during winter months when peaks for the year are normally reached.

In the weeks ended June 24 and July 1 alltime highs in electric energy output were set, exceeding the former record attained in the week ended Feb. 4. The next few weeks will see some decline from these marks because of the holiday and plant closings for mass vacations. By the end of this month new records are again likely as industry gets back in full stride.

Whopping Total—Net earnings for privately-owned electric utility companies are estimated at $448 million by the Edison Electric Institute. This total is 13.2 per cent higher than in 1949's first half. Earnings for all 1950 should range between $850 and $900 million, compared with actual 1949 net of $769 million. Additional taxes for either war or armament could change this outlook. When earnings are calculated on the basis of total plant investment the picture is not quite so bright. Earnings were 5.25 per cent on net plant investment in the 12 month period ended June 30, compared with 5.3 per cent in 1947 and 5.6 per cent in 1946. The latest total is better than the 5.1 per cent attained in 1949 and 4.9 per cent in 1948.

Electric Powered—Industry's consumption is estimated at 65 billion kwhr in the first half, up 4 billion over a year ago despite the coal strike that hampered output in January and February. Residential consumption tops year ago figures by 15.1 per cent.

New generating capacity is being added at a faster rate than consumption is growing. Edison Institute totals show installed capacity at all public utility power plants is now 65 million kw. Capacity is up 12 per cent over a year ago while peak loads have grown 10 per cent.

Gas Appliances Boom

Gas-fired central heating unit shipments in the first five months set a new record totaling 307,400 units or 164.5 per cent more than

the like 1949 total and 15 times more than the 1936-40 average, says Gas Appliance Manufacturers Association. These figures include furnaces, gas-fired boilers and gas conversion boilers.

Gas range shipments totaled 1,111,000 in the first five months. This total is 64 per cent greater than the 677,000 units shipped in the corresponding period a year ago and is slightly below the 1,206,400 units shipped in the like 1948 period.

Another alltime high for the first five months was set by gas water heater shipments which aggregated 831,600 units. Not only is this total 61.7 per cent higher than the like 1949 total but it outdistances shipments for the same period in 1947, the industry's best year to date, by almost 25,000 units.

Building Cost Index Turns Up

The industrial building cost index maintained by Aberthaw Co., Boston, moved up to 311.1 on June 30 from 304.6 on Mar. 31. This was the first upturn in 18 months. The index is based on 1915 costs equaling 100.

Wage increases in many building trades went into effect in April and May. These together with the higher cost of many materials such as structural steel, reinforcing steel, lumber, hard wood flooring, nonferrous metals, etc. were largely responsible for the reversal in the index.

Busses Rolling Faster

Bus market is gradually strengthening, reports General Motors' GMC Truck & Coach Division, Pontiac, Mich. In June the division delivered 214 busses, the second consecutive month in which GMC topped the 200 unit total. Unfilled orders on July 1 totaled 526 on purchases made by 69 operators.

This widespread buying indicates transportation companies are adjusted to higher wage and material costs and are proceeding to rehabilitate their systems with new and more economical coaches, GMC says.

More Resistance Welders Sold

Resistance Welder Manufacturers Association, Philadelphia, announces orders received by its members in May were 26.5 per cent higher than in April. The same statistics indicate net orders for the first five months this year were up 44.6 per cent over the like 1949 period. Backlog of orders on June 1 was up 17.7 per cent over a month earlier.

Working Capital at Peak

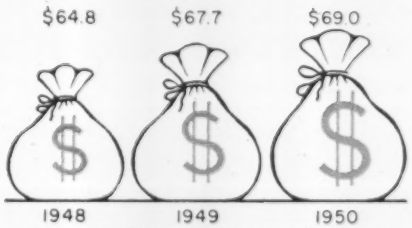
Cash and securities holdings amount to $40.4 billion or 72 per cent of current liabilities

TAKING full advantage of operations at high levels U. S. corporations are improving their financial position and at the same time adding to their productive capacity. Securities & Exchange Commission reports U. S. corporations net working capital reached a new record level of $69 billion at the end of the first quarter.

The latest total represents a $1.3 billion rise since the end of 1949 and is $4.2 billion higher than at the end of 1948 (see chart). At the war's end net working capital amounted to $51.6 billion.

Steady Capital Growth

. . . Up $4.2 billion since 1948



Figures in billions of dollars.

Healthy Ratio — Improvement in corporate liquidity as measured by the ratio of cash and government securities to current liabilities continued in the first quarter. Cash and government security holdings aggregated $40.4 billion at the end of March. These holdings were over 72 per cent of current liabilities, compared with 61 per cent at the end of 1948 and only 45 per cent prewar.

Corporations not only raised their working capital in the first quarter but invested about $3.4 billion in plant and equipment. This $4.7 billion expansion was financed by securing $1.1 billion or less than one-quarter from external sources. Internal sources—depreciation accruals and undistributed profits—provided the remaining $3.6 billion. External capital consisted of $600 million in long-term borrowings and $500 million in new stock issues.

Buying Bonds—Cash and bank deposits dropped $1.2 billion in the first quarter to $23.7 billion while holdings of U. S. government securities increased $1.1 billion to $16.7 billion. Total current assets increased by $700 million to $124.8 billion largely because of growth in receivables and inventories. Notes and accounts receivable moved up almost $400 million to $38.7 billion. Inventories showed almost an equal rise, the first since 1948's last quarter, to a $44.2 billion value. Other current assets rose about $100 million since the end of 1949 and amounted to $1.5 billion.

Current liabilities dropped about $600 million in the first quarter to $55.8 billion. This decrease was more than accounted for by a $900 million decline in notes and accounts payable to $32.8 billion. Federal income tax liabilities were $9.7 billion in the first quarter, the same as at the end of 1949. Other current liabilities increased $200 million to $13.2 billion.

Manufacturing companies accounted for most of the increase in working capital during the first quarter. Trade companies, railroad and mining companies showed small declines. Electric and gas utilities increased their working capital moderately.

Radio Alive and Kicking

Those who thought that radio production would fall victim to growing television sales were a little premature. Philco Radio Corp., Philadelphia, says orders booked so far for its new radio and radio-phonograph models indicate sales from June through September will more than double the volume for the like 1949 period.

Albert J. Rosebraugh, radio sales manager, says these orders represent a 109 per cent increase in units and a 175 per cent increase in dollar volume over a year ago. Philco has definitely resisted a temptation among some manufacturers to neglect radio for television, he explains, and the company notes a strong recurrence of demand for all radio types in television areas.

Tight Sheets Pinch Maytag

Only immediate disconcerting factor for Maytag Co., Newton, Iowa, is a shortage of sheet steel. The company's earnings in the first half are expected to be the largest for the period in history. Earnings in the second quarter were only slightly below the record first quarter when the net was $2,967,588.

Maytag had a breathing spell in the first two weeks this month because of a two-week plant closing for vacations. The sheet shortage is said to be exerting an upward pressure on prices and may be felt in Maytag's plans for introducing a dryer this year. The company says these plans may be shelved this year if the sheet supply does not ease considerably.

Men of Industry

EDWARD V. MELSHA
. . . new president, Vulcan Iron Works

Edward V. Melsha, formerly executive vice president, **Vulcan Iron Works,** Wilkes-Barre, Pa., was elected president to succeed **Benjamin S. Dowd. John A. Roberts** was elected chairman of the board; **Harold R. Pittman,** secretary and treasurer; and **W. Emory Wood,** assistant secretary and assistant treasurer.

George P. Thomas Jr. was elected vice president, **Thomas Machine Mfg. Co.,** Pittsburgh. He has been with the company since 1932 and has been acting as purchasing agent. He will continue in this capacity in addition to his new duties as vice president.

John F. Gordon, vice president of **General Motors Corp.,** Detroit, and general manager of Cadillac Motor Car Division, was appointed vice president of General Motors in charge of the engineering staff. He succeeds **James M. Crawford** who is on a disability leave of absence. **Don E. Ahrens,** general sales manager of the Cadillac division since 1935, succeeds Mr. Gordon as general manager.

J. K. Sutter was appointed Pittsburgh district manager, **Spang-Chalfant Division,** National Supply Co., Pittsburgh. He has been Boston sales representative for the division since 1944. He succeeds **C. J. Ramsburg Jr.,** promoted to manager, welded product sales.

John T. Gossett resigned as vice president, **Inland Steel Container Co.,** subsidiary, Inland Steel Co., Chicago, and **William G. Caples,** industrial relations manager of Inland Steel, will be in charge of the container company as acting vice president.

HARLOW F. ST. PIERRE
. . . Hunt-Spiller indus. sales mgr.

Harlow F. St. Pierre, formerly assistant sales manager, was appointed to the newly created position of manager of industrial sales division, **Hunt-Spiller Mfg. Corp.,** Boston, producer of iron and steel castings. He joined Hunt-Spiller in 1946 as sales engineer.

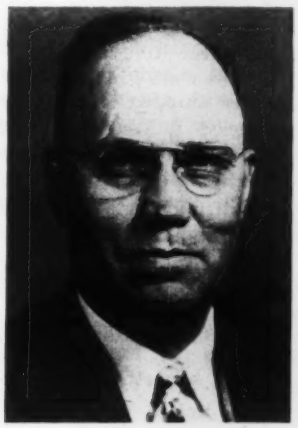
Harry J. Mokate joined **Dumas Steel Corp.,** Pittsburgh, an affiliate of M. G. Dumas & Sons, as general manager of sales. He formerly was with U. S. Steel Corp. subsidiaries for 26 years in sales, more recently completing four years as vice president of Nikoh Tube Co., Chicago.

W. Jack Develin was appointed consulting engineer to head up engineering and sales of the solid steel belting department, **Metalsmiths,** division of Orange Roller Bearing Co. Inc., Orange, N. J. He previously was manager, conveyor division, Sandvik Steel Inc.

C. F. Cerull and **D. E. Ohl** were named assistant chief engineers, and **J. H. Mulcahy,** assistant industrial relations director, **Republic Steel Corp.'s** Youngstown district.

Charles R. Peterson was named personnel manager of **Budd Co.'s** new automobile body components plant in Gary, Ind. He has been director of training on the staff of the personnel and industrial relations department, Charlevoix plant, Detroit.

Andrew E. St. John was appointed to the sales and engineering staff, **Barth Smelting Corp.,** Newark, N. J. For the last 25 years he has been associated with Federated Metals.



JESSE L. POWERS
. . . special assignment for Buick

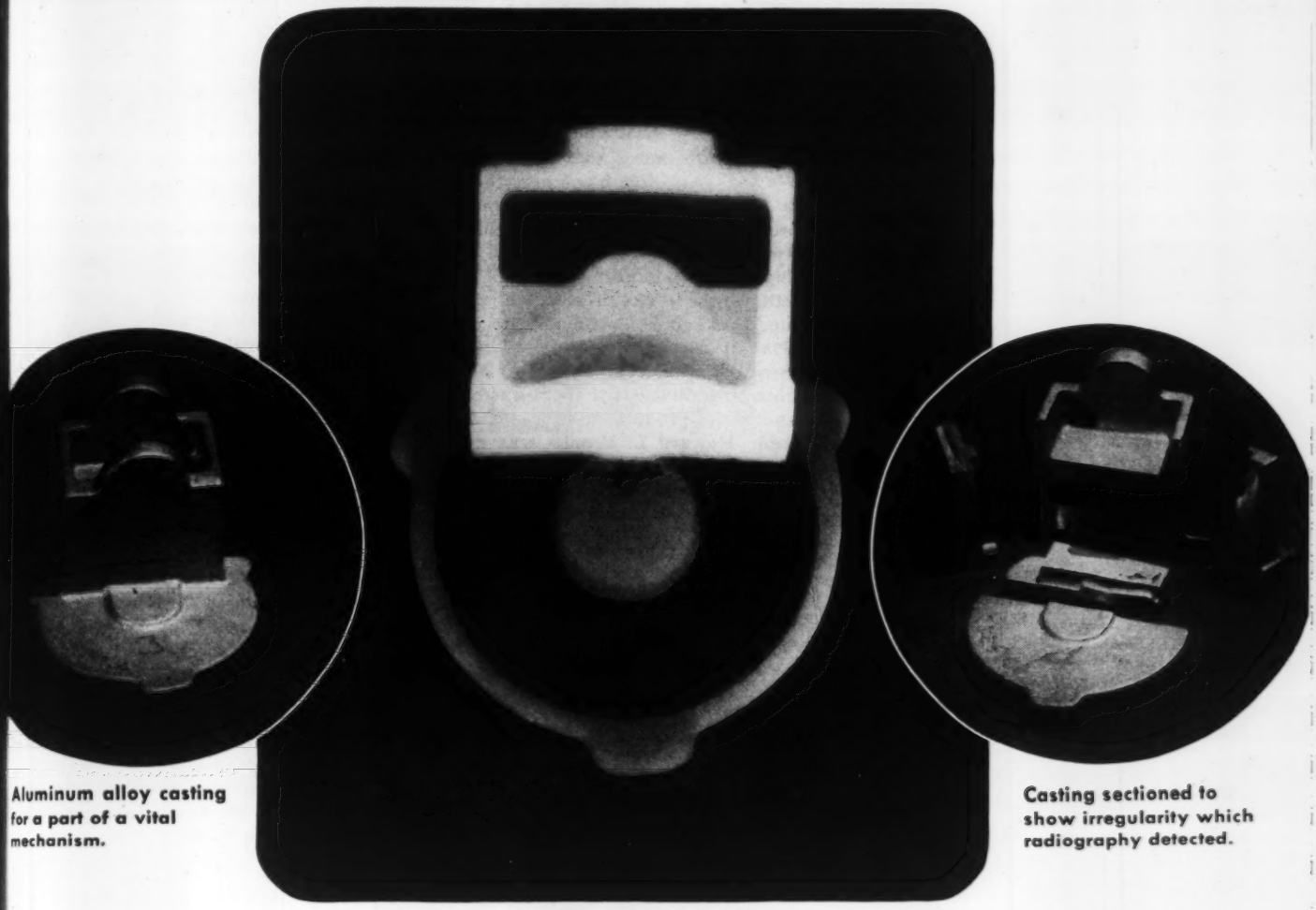
Jesse L. Powers was promoted to general superintendent on special assignments, **Buick Motor Division,** Flint, Mich., General Motors Corp. He is succeeded by **Stanley White** as superintendent of the Buick engine plant. **Jerry B. Doll,** assistant superintendent of the engine plant, was named superintendent of the service parts manufacturing plant to succeed **T. J. Johnson,** retired.

Bridgeport Brass Co., Bridgeport, Conn., appointed **Irving M. Malsch** Chicago district sales manager to succeed **Carl P. Quanz,** who was promoted to plant manager in charge of all activities at Bridgeport's Indianapolis mill. Mr. Malsch for the last few years was Indianapolis district manager, where he is succeeded by **David L. Nesler.**

Harlan B. Collins and **Russell B. Kern** were named to head a separate public relations department established by **Link-Belt Co.** at its executive headquarters in Chicago. In the advertising department **Bertram V. Jones** was appointed executive assistant advertising manager, and **John F. Kelly** will be assistant advertising manager.

George I. Bottcher was appointed chief engineer, **Allegheny Ludlum Steel Corp.,** Pittsburgh. **J. F. Chapman** and **R. E. Smith** were appointed assistants to the chief engineer. Mr. Bottcher joined the engineering department of Allegheny Ludlum in 1941, and was made construction engineer in 1946 and assistant chief engineer in 1947.

Lone Star Steel Co., Dallas, appoint-



Aluminum alloy casting for a part of a vital mechanism.

Radiograph which revealed imperfection in the casting.

Casting sectioned to show irregularity which radiography detected.

Radiography helps prevent delays in production

ALONG with scores of other castings, this one becomes part of an intricate mechanism. Extremely high quality is a must. Machining is long, complicated, and precise. Should the casting be imperfect, not only the piece and the machining time are lost—the flow of finished parts is disrupted and a whole assembly line delayed.

This is why it pays the foundry well to check the casting radiographically. It is the one way any foundry can be certain it releases only sound castings. And, equally important, it is a way that not only detects irregularities but, at the same time, indicates ways to revise gating, venting, pouring temperature, and other variables which influence consistently good work.

Ask your X-ray dealer to explain the many ways radiography can increase your yield and cut your costs.

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Radiography...
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TRADE-MARK

ed to its expanding sales organization **Edward L. Beatty, Rufus C. Somerville** and **Richard Hirsch.**

E. J. Kolb was appointed manager of export sales, **Crucible Steel Co.**

E. J. KOLB
. . . manager, Crucible export sales

of America, New York. He will remain at the headquarters in New York, where he has served in the export department for nine years as assistant manager of export sales.

Herbert J. Meyfarth was appointed superintendent, Elyria, O., plant, **Republic Steel Corp.'s** steel and tubes division. He succeeds **J. J. Parks,** retired. Mr. Meyfarth has been assistant plant superintendent of the division's Cleveland plant.

H. Irving Thomasmeyer, sales manager, Syracuse Chilled Plow Co., Syracuse, N. Y., was appointed superintendent of **Deere Mfg. Co.'s** plant in Ottumwa, Iowa.

David H. E. Genter was appointed superintendent, agricultural departments, Midland Works, **Crucible Steel Co. of America,** Pittsburgh.

William H. Powell, treasurer, **Samson-United Corp.,** Rochester, N. Y., was elected president succeeding **D. D. Gillespie,** resigned after serving for nine years.

Robert Greer was appointed district representative for New York state outside of metropolitan New York for **Precision Welder & Machine Co.,** Cincinnati. He will be located in Syracuse, N. Y.

General Electric Co. appointed: **Francis E. Fairman Jr.** general sales manager, large apparatus divisions, and **Arthur W. Bartling,** general sales manager, small apparatus divisions, apparatus department. Mr. Fairman, formerly manager of sales for the department's transformer and allied product divisions in Pittsfield, Mass., will be located in Schenectady, N. Y. Mr. Bartling, formerly manager of sales for the department's fractional-horsepower motor divisions in Fort Wayne, Ind., will have headquarters in Lynn, Mass. **William S. Ginn** succeeds Mr. Fairman in Pittsfield, and **Robert C. Hanna** assumes Mr. Bartling's position in Fort Wayne. **W. Scott Hill,** formerly vice president, engineering, Locke Inc., Baltimore, has joined General Electric's apparatus department as manager, commercial engineering division of the transformer and allied product divisions at Pittsfield. **Howard L. Franks** was named manager of sales personnel and control, chemical department. He was director of sales, Merrill Bros., Maspeth, N. Y., for the last three years.

Robert N. Harwood was named general manager of **Edgar T. Ward Di-**

ROBERT N. HARWOOD
. . . Edgar T. Ward general mgr.

vision, Cleveland, Solar Steel Corp. He was with Edgar T. Ward's Sons Co. from 1932 to 1946. Since then he has been general manager and a director of Ohio Stainless & Commercial Steel Co. **John B. Briggs** was appointed manager of the Philadelphia office of **Solar Steel Corp.,** and **Donald McVay** was transferred from Philadelphia to Solar Steel's Detroit office. **Joseph Kerschbaum** was granted a leave of absence from the Philadelphia operation.

W. J. O'Brien retired as vice president, **Glidden Co.,** Cleveland. He joined the company in 1920 and became a director and vice president in charge of manufacturing and research. He remains with the company as technical consultant and a director.

Roy W. Pitts, purchasing agent, Atlantic Steel Co., Atlanta, was installed as president of the **Purchasing Agents' Association of Georgia** to succeed **C. W. Hayes.** Mr. Pitts was recently appointed to the Scrap Advisory Committee, American Iron & Steel Institute. Other association officers elected are **C. H. Held** and **Graham Mitchell,** vice presidents; **P. J. Rogers,** secretary, and **W. H. Bryant,** treasurer.

C. A. Mohorter, formerly with Manlius Mfg. Co., Syracuse, N. Y., has joined **American Production & Grinding Corp.,** Syracuse, as superintendent of shop operations.

J. M. Bertotti, for the last four years manager of training, **Carboloy Co. Inc.,** Detroit, was named assistant sales manager, and **R. G. Brierley** was appointed manager of training.

Andrew E. O'Leary was transferred from St. Louis to Cleveland to direct eastern Ohio sales of DeWalt high-speed radial saws, **DeWalt Inc.,** subsidiary of American Machine & Foundry Co.

Alfred N. Young was appointed sales-service representative, **Pennsylvania Salt Mfg.'s** special chemicals department in the St. Louis area. He succeeds **Charles R. Sorber Jr.,** recently transferred to the Cincinnati territory.

H. Campbell Stuckeman was appointed vice president in charge of sales and operations, **Delta Power Tool Division,** Milwaukee, Rockwell Mfg. Co. **Harold C. Hjerpe** succeeds Mr. Stuckeman as general manager.

H. CAMPBELL STUCKEMAN
. . . Rockwell V. P. of sales

Delta Mfg. Division, a manufacturing unit of the power tool division.

Donald J. Devereaux was appointed to the newly created position of general manager, stove division, **Nesco**

CHARLES SCHRIBER
. . . V. P. and director for Jorgensen

F. F. ROEHLL
. . . Eutectic national sales manager

Inc., Chicago. He resigned as sales manager, Kalamazoo Stove & Furnace Co.

Charles Schriber was appointed a vice president and director of **Earle M. Jorgensen Co.**, steel distributor with plants in Los Angeles, Oakland, Calif., Houston and Dallas. Prior to association with Jorgensen in January of this year, Mr. Schriber was a vice president of Republic Supply Co. of California. He was appointed manager of sales of Jorgensen's Los Angeles office in April, and will continue in this position.

Wellman Bronze & Aluminum Co., Cleveland, appointed **Donald Dingwall** as its Chicago representative.

F. F. Roehll was appointed national sales manager, **Eutectic Welding Alloys Corp.**, New York. He became associated with Eutectic shortly after the war as a local district engineer in California. After several years of service in the West Mr. Roehll was transferred to the New York office, where he served as sales supervisor.

E. E. Radcliffe, formerly with Unionmelt Division, Union Carbide & Carbon Corp., has joined **Reid Avery Co. Inc.**, Dundalk, Baltimore, as a specialist on submerged melt welding.

Chester V. Nass, vice president, Pettibone Mulliken Corp., Chicago, succeeds to the presidency of the **Chicago Chapter, American Foundrymen's Society,** to fill the vacancy created by the death of **Alfred W. Gregg,** consulting engineer, Whiting Corp., Harvey, Ill. Mr. Nass was elected vice president of the chapter for 1950-51, and is succeeded in that position by **Walter W. Moore,** works manager, Burnside Steel Foundry Co., Chicago.

William R. Sandberg was appointed general sales manager, **Phoenix Mfg. Co.**, Joliet, Ill., and Catasauqua, Pa. He will supervise sales and sales promotion for the company's four divisions.

Tom Maston was placed in charge of industrial sales in Indiana (excluding the Lakeshore area) and southwestern Ohio including Cincinnati, **Keystone Steel & Wire Co.** His headquarters will be in Sheridan, Ind. **G. Wayne Bruce** was appointed industrial sales representative in lower Michigan, with headquarters in Grand Rapids.

Westinghouse Electric Corp., Pittsburgh, appointed **Louis R. Botsai** as manager, motor and control division, Buffalo, to succeed **Leon R. Ludwig,** who was appointed a member of the staff of **John K. Hodnette,** vice president, Pittsburgh. **William U. Dent** was appointed far western electronics sales representative, San Francisco. **Jerome E. Hoag Jr.** was appointed finance representative in the eastern district with headquarters in New York. Among other duties he will promote and develop the Westinghouse Equity Plan in that district.

OBITUARIES . . .

Joseph P. Cattie, 68, president, **Joseph P. Cattie & Bros.**, Philadelphia, died recently.

Arthur R. Thiele, 36, vice president and treasurer, **Chicago Precision Supply Co.**, Chicago, died July 3.

William S. Stephenson, 72, long identified with the steel industry, died recently at Winter Park, Fla. He was Philadelphia district sales manager for many years for Armco Steel Corp. and later president, **Philadelphia Steel Sales Co.**, until he retired a few years ago.

Charles Kaufman, 80, a director of **Cleveland Cap Screw Co.**, Cleveland, died July 10. He invented the Kaufman cap screw manufacturing process, which the company uses.

Robert Wason, 62, president since 1931 of **Manning, Maxwell & Moore Inc.**, New York, and president, National Association of Manufacturers in 1946, died of a coronary thrombosis in his office in New York July 7. At the time of his death he was chairman of NAM's finance committee.

Maurice L. Kerr, member of the engineering staff, **White Motor Co.**, Cleveland, died July 8.

Frank A. Bond, 66, vice president, **McKay Co.**, Pittsburgh, died July 3.

T. D. Yensen, 66, authority on the science of magnetics, who was for 42 years a member of the research staff, **Westinghouse Electric Corp.**, Pittsburgh, died July 2 at Prestwick, Scotland. He had retired from Westinghouse three days previously, and at time of his death was enroute to his native Norway.

Albert D. Mahony Sr., former operator of **Mahony Boiler Mfg. Co.**, Troy, N. Y., died July 3.

Arthur R. Weber, 73, representative, **H. B. Sherman Mfg. Co.**, Battle Creek, Mich., died July 6.

George W. Coffey, 55, chairman and president, **Pacific Tin Consolidated Corp.**, New York, died July 4.

Robert W. Coltman, 64, for more than 40 years with the **National Carbon Division,** Union Carbide & Carbon Corp., New York, died July 8. Since 1909 he had been in the research laboratory in Cleveland.

David K. Miller, 52, national representative, alloy steel division, **Crucible Steel Co. of America,** New York, died June 30.

Raymond J. Greiten Jr., 45, power engineer, died of a heart attack July 5. For the last three years he was district sales engineer, **Hoffman Combustion Engineering Co.**, Detroit, and previously for 11 years was sales engineer, George H. Fredricks & Co., Milwaukee.

Michael F. Moore, 81, at the time of his retirement vice president-production, **Kewanee Boiler Corp.**, Kewanee, Ill., died July 1.

Paul B. Mossman, 74, retired vice president, **Harbison-Walker Refractories Co.**, Pittsburgh, died July 8 at his home, Sunset Island, Fla.

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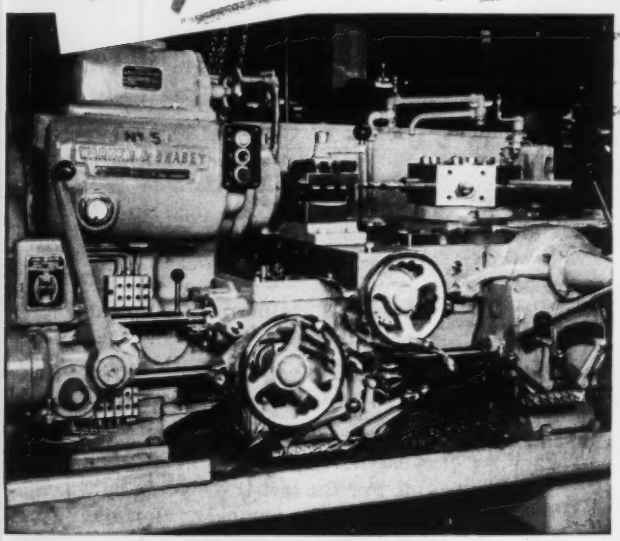

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Production AND Engineering
NEWS AT A GLANCE

TWO BLOWS—NO FLASH—Use of a Maxipres in forging an automobile hub in the plant of Lefere Forge & Machine Co., Jackson, Mich. is holding the production rate at about 450 forgings per hour. The National press, which receives the blanks from the furnace, forges the hubs in two blows to close tolerances—so close that there is little work for the trim press. The forging weighs 7 pounds 5 ounces, with only a small amount of stock lost in the flash ring and slug.

"NOTHING" MEASURED BETTER THAN ANYTHING—Twenty-nine-year old Robert T. Bayard of Westinghouse Research lab hit upon a method to measure almost complete nothingness. He developed a gage that is 200 times more sensitive than any ever produced, and which may prove to be the key to unlock the door to many new fields of investigation. For example, a better understanding of how gases seep through metals may follow as result of the development. The electronic pressure gage which looks like a large radio tube and behaves in a similar manner, can detect presence of air in a vacuum where only one air molecule remains out of every 10,000 billion originally present. Air molecules at this pressure are so rare that each one must travel some 500 miles before striking another.

TOOL MARK HEIGHT REDUCER—Higher finish on the cutting rake of broaches is now possible through a new process of diamond dressing grinding wheels developed in the plant of Colonial Broach Co., Detroit. The company says the method increases surface smoothness of broached surfaces, holes, splines, etc., by reducing the height of the minute tool marks at the cutting edges of the broach teeth. Smoother chip flow while the chip is being curled up in the chip space is another result of the development.

RAMP FOR EVERY LOAD—By using ramps that fit the load, the Naval Supply Center, Norfolk, Va., is able to make labor savings of about 15 per cent in loading and unloading trucks and vans. At the base, previously used metal plates, discarded as inefficient, unwieldy and a safety hazard, are replaced by hydraulically-operated loading ramps. In various sizes, these allow for different load openings and door widths. They are actuated by hydraulic rams driven by ½ or ¾-horsepower electric motors.

WALNUT SHELLS—AGAIN—Walnut shells must have what it takes when it comes to knocking off steel burrs. Automotive engineers report that finely ground walnut shells provide an ideal "shot" for blasting tiny metallic burrs off machined surfaces of transmission castings. Each piece of "shot" is exactly one thirty-second of an inch in diameter and it strikes the casting at a velocity of more than two miles an hour. In the application, the ground shells are fed into a turbine-like wheel that rotates at 250 revolutions per minute, hurling the particles inside a chamber through which the castings pass on a revolving, circular table. The castings themselves each rest on a disk that turns in the same direction as the table. This permits the shells to rain on the castings in about a 140-degree arc.

NOT LAST WORD—Solid carbide insert cutting tools are making spectacular machining economies. But they are not the final answer to machining problems. Full benefits, it is pointed out, only can be derived through judicious selection of the tools for a given job. Some of the things to be watched when applying solid carbide inserts can be very helpful in capitalizing on their advantages. (p. 80)

THE PASTE THAT "TOLD"—Use of copper paste in brazing operations at National Cash Register, Dayton, O., is paying off in a big way. The procedure used by the company in connection with business machine parts not only provides better copper flow on tight press and rivet fits, but also speeds up furnace production. Real savings, however, are made by eliminating operations previously required on jobs that were hand wired. Rejects also are almost a thing of the past. From all causes, amount of rejects today are less than one-half of one per cent. (p. 82)

TWO YEARS' TRIAL—What's the pitch on nodular iron? For a first-hand report on this material STEEL's editors asked all licensees under International Nickel Co.'s patents to comment on their experiences. Their reports indicate there is a healthy acceptance of magnesium-treated cast iron. Although the work of many companies is strictly experimental, others arrived at fairly definite conclusions on the material's usefulness commercially. (p. 85)

TOO MUCH SULPHUR—Present-day coking coals with increasing sulphur contents are posing a gas-purification problem for steel plants whose reheating furnaces operate on by-product gas. Too much sulphur in the gas means contamination of billets, slabs or other semifinished steel reheated in the furnaces. To remove troublesome hydrogen sulphide and other sulphur compounds from the gas some companies are installing gas purification systems at the coke ovens. One method now in commercial use is the Koppers vacuum actification sulphur recovery process. This system removes and recovers hydrogen sulphide from the coke oven gas. It also takes out and recovers hydrogen cyanide. (p. 102)

What Carbide Insert Tools Can

Wise selection of cutting tools can reduce your machining costs by speeding production, cutting down the time needed for changing set-up, regrinding and resharpening

SOLID carbide insert cutting tools are responsible for some spectacular machining economies. But tools of this type are not the final answer to machining problems. Full benefits to be derived from their use, as from all other cutting tools, depend on their judicious selection for a given job.

Theory behind the development of inserts was this: If a carbide could be arranged so whenever one edge became dulled another could be presented quickly to the work without removing the tool holder and without disturbing the entire setup, considerable time would be saved. Further, if wear on a carbide could be distributed over all of its edges instead of one, before regrinding, a tremendous amount of man-hour time could be saved in regrinding and resharpening operations. With the development of solid insert carbide tools these two main aims were realized. In addition, many other benefits accrued to the user.

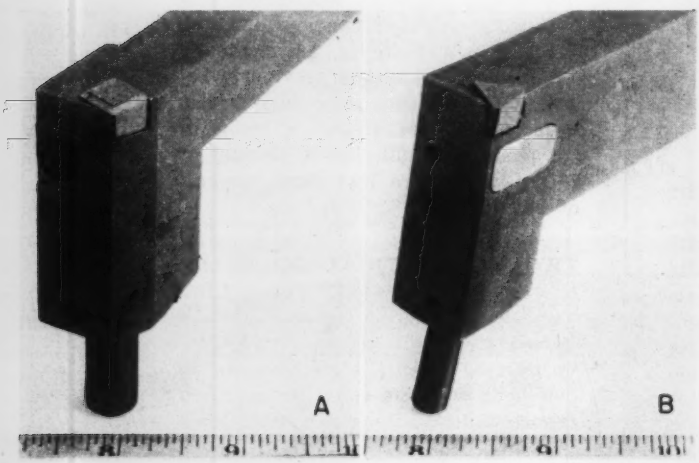


Fig. 1—Two types of solid insert cutting tools. (A) Square insert with chip breaker ground into the face. (B) Solid triangular insert

Dimensions Vary—Inserts are approximately 1½ inches long by ½-inch in diameter. However, these dimensions vary. Inserts are round, triangular, or square, with some special rectangular available for special applications. They are vertically positioned and clamped in a steel holder, Figs. 1 and 2.

A tool holder for the inserts consists of a shank which is sometimes solid, and in some instances partially split. The solid insert is received by a recessed slot which has been broached into the insert. The recessed slot conforms to the shape of the insert it is to receive, i.e., square, round, triangular.

Some Inserts Clamped — The holding recess is broached accurately and in some tools the insert is held against the supporting walls of the tool holder by means of a small "patch", or clamp, on the front side of the tool holder. It is from the front end that tightening or loosening is accomplished. The front end is always exposed even if the tools are mounted closely together on multiple tool setups. A function of the clamping patch is to hold the insert in the same direction as the cutting force when the tool is in operation.

Tool holder manufacturers can supply holders of

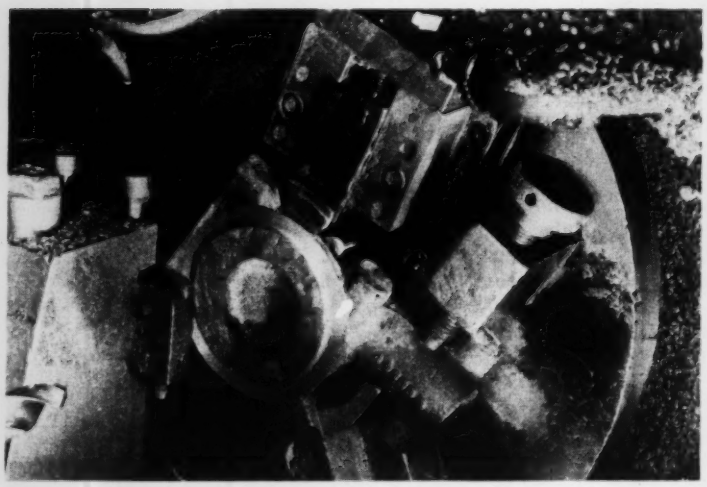


Fig. 2—Machining a cast iron valve body with a circular insert

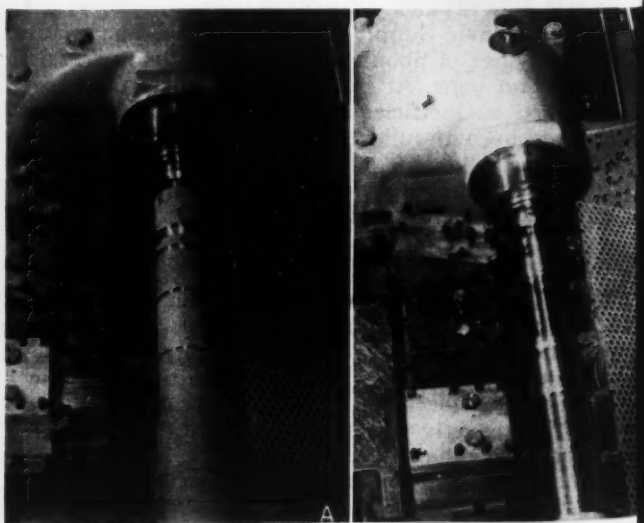


Fig. 3—(A) Forged steel shaft, 275-300 Brinell, prior to machining. Eight tools are used on this Sundstrand No. 16 automatic lathe, 75 hp. (B) Operation consists of turn chamfer, form radius, square shoulders

Do For You

almost any size or shape to match the inserts. Some holders can accommodate two, three or more, or even eight tools (for plunge turning). To permit vertical adjustment of the insert a backup screw is located at the bottom of the holder. This backup screw is used to adjust the insert to the proper cutting height whenever it is reduced in size by grinding.

Multiple Advantages—Solid carbide inserts have the following general advantages:

1. Longer Tool Life Between Regrinds. As quickly as one cutting edge becomes dulled the insert is loosened in its holder without disturbing the setup, or the tool holder. It is slightly turned in the holder, clamped and cutting can be resumed.

Presents Many Cutting Edges—When a round insert is used as many as 12 cutting edges can be presented to the work before it becomes necessary to remove the insert and regrind it. Even after 12 surfaces of the insert (assuming the insert is round) have been used it is still not necessary to regrind; the insert is merely removed from the holder and turned end for end, thus presenting 12 new surfaces to the work.

2. No Expensive Waste. As soon as all surfaces have been dulled the insert is reground. These surfaces can be reground until half the entire insert is used. The small prism of carbide remaining can be further utilized by taking two of the prisms and brazing them together end on end, taking care to line up the outer surfaces. They can be employed as inserts.

3. Changing Time Reduced. When a tool is changed on the standard machine tool the setup is usually disturbed. Indexing is necessary after every tool change and considerable time is wasted in placing the tool into position and into action. With the use of solid carbide inserts this is unnecessary. The insert is merely lifted out of the holder which remains on the tool post, is turned slightly, and is reinserted into position. A new cutting surface is ready immediately. This simplicity is particularly valuable when a multiple tool setup is encountered.

4. Regrinding Time Is Cut. Because relief angles are provided by the tool holders offhand grinding can be used. Both ends of an insert are quickly squared. Chip breakers can be ground in square, rectangular and triangular bits using a chip breaker grinder or a surface grinder. The round inserts lend themselves admirably to dish grinding. They may be ground with concave end surfaces to produce neutral or positive rake angles.

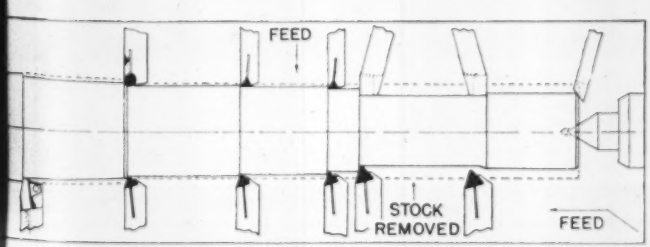


Fig. 4—Positioning of the various carbide tools in machining forged steel shaft shown in Fig. 3. Twenty-four pounds of metal are removed in 55 seconds

Case History No. 1

Workpiece:	Cast steel housing
Machine:	Bullard vertical turret lathe
Operation:	Facing. Severe interrupted cut
Tool:	Round insert
Speed:	415 sfm (maximum)
Feed:	0.043-inch
Depth of cut:	⅛ to ¼-inch
Note:	Facing the combination 14½ inch and 6 inch diameter flanges on this cast steel housing presented severe interrupted cutting.
Performance:	To machine one complete casting per tool regrind was considered good. With solid inserts 30 to 40 castings were machined before insert was indexed to new cutting position.

Case History No. 2

Workpiece:	Cast iron valve body
Machine:	Gisholt turret lathe
Operation:	Rough and finish facing
Tool:	Round insert
Speed:	250-400 sfm
Feed:	0.005-inch
Depth of cut:	⅛ to $\frac{3}{16}$-inch
Performance:	Tools previously used had to be changed eight times per shift. Inserts are indexed twice per shift, and give 4 days' service before resharpening.

Case History No. 3

Workpiece:	Forged steel shaft, 275-300 Brinell
Operation:	Turning, chamfering, forming radius, and squaring shoulders
Machine:	Sundstrand 16 automatic lathe, 75 hp.
Tools:	7 triangular inserts; 1 clamped-on tool; 1 round insert; special brazed-on tools for squaring shoulders and chamfering.
Speed:	375 sfm, largest diameter
Feed:	Front carriage, 0.029-inch, back slides, 0.031-inch
Depth of Cut:	½-inch maximum
Machining Time:	55 seconds
Metal Removed:	24 pounds
H.P. Used:	Up to 100 hp for a few seconds

Fifty shafts were machined before indexing the insert tools.

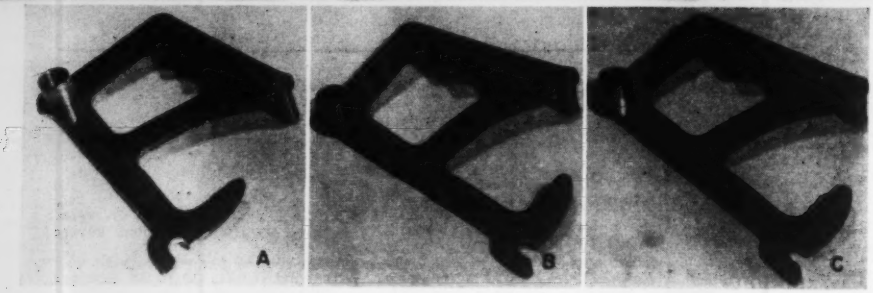
5. Storage And Inventory Is Simplified. Inserts can be classified according to type; i.e., round, triangular, square; listed according to whether they have chip breakers; and further indexed by the grade of carbide. There is no need to stock a large variety of bits and holders for different jobs. Any carbide insert which fulfills the requirements of the job at hand can be used, and a single insert is usable in a wide variety of holder styles and sizes.

How to Select Tooling—Some things must be watched when applying solid carbide insert tooling. One of them is overall size of the tool holder. Usually the front section of the tool holder is approximately 2 inches high; extending below this is another inch of backup screw, depending on the length of the insert. Distance the backup screw extends below the tool holder is always governed by the length of the insert.

Thus, the 3 inches of tool holder may present an obstacle on some types of operations. The front may not clear certain parts of the machine. Further, it may become awkward to reach the backup screw after the tool holder is placed in the tool block. While this situation is not serious except on certain types of machines and operations, it must be taken into consideration when planning the use of solid inserts.

Position of the insert in the tool holder is again dependent on the operation. The insert can be mounted on a corner of the holder to aid in clearing parts of the machine or the work.

Positive Rake Angler for Nonferrous—On machining of nonferrous materials (*Please turn to Page* 96)



Copper Paste

Fig. 1—Views of No. 1 printing operating arm showing piece as assembled, as spotted with copper paste, and as delivered from brazing furnace

National Cash Register method provides tighter joints, increased furnace production and requires less hand labor. Savings range up to $3.15 per hundred on business machine parts

INCREASED furnace production, better copper flow on tight press and rivet fits, and substantial savings in labor costs are being realized at National Cash Register Co., Dayton, by use of a copper paste in the brazing of approximately 16 million small and large machine parts. These are components of the many business machines and other products NCR produces for offices and business establishments throughout the world.

Real savings result from elimination of operations particularly on jobs which were previously hand wired. Where a large number of copper wire rings are required on a particular part, it is usually more advantageous to use the paste. For instance, savings on the brazing of a part identified as switch lock lever—A are approximately $3.15 per hundred units processed. This previously had been a hand wired job. Today, rejects for all causes on this part are less than one-half of 1 per cent.

A part known as printing operating arm No. 1 whose brazing is shown in the accompanying photographs, is a steel part made up of a hub and stud which are riveted into the arm before brazing. An operator by means of an applicator gun applies two dots of the copper paste on the hub and one dot on either side of the stud. The gun used is a Paasche stripping gun which NCR engineers revamped for this particular application. It is connected to an air cylinder which affords remote control foot operation.

Furnace Travel Requires 9 Minutes—After the operator has applied the copper paste, parts are put on the conveyor which moves at approximately 1 foot per minute for this particular part and carries the material into a brazing furnace. Travel through the heating section of the furnace, which is held at 2070° F, requires 9 minutes after which the parts enter the cooling section. A period of approximately 45 minutes is required for these parts to be conveyed through the furnace to a station where they are given a 100 per cent visual inspection and placed in the original tote boxes. Material passing this inspection is conveyed to another section of the department where all excess copper is removed in a bath of standard cyanide stripping solution.

Three Furnaces Do Brazing—Three General Electric furnaces similar to the one shown in Fig. 5 are available for the brazing of these parts. Protective atmospheres used in these furnaces are supplied by cracking natural gas in a Westinghouse endothermic type producer and two General Electric exothermic type units, interconnected in such a manner that either type of atmosphere can be supplied to any of the three furnaces. The endothermic type atmosphere is used mainly to prevent the decarburi-

Fig. 2—Operator is seen applying paste with Paasche stripping gun that has been revamped by National Cash Register's engineers

Fig. 3—After parts receive copper paste they are inspected and placed on conveyor which moves through the wall into the furnace in adjacent room

Lowers Brazing Costs

BY DAN REEBEL
Associate Editor, STEEL

Photography by the author

zation of the carburized cases of parts which are to be subsequently hardened.

In the use of paste, the human element is most important as it must be applied exactly at the joint to prevent any running away during brazing. Some jobs are being run with a multiple tip gun which can be adjusted to spot the paste in desired locations. Biggest problem encountered by the operators is to get the gun to control the paste in small enough amounts as it is being applied to some of the smaller parts prior to brazing. All paste applications at NCR are made by use of pneumatic applicator guns that are equipped with nozzles of the appropriate size.

At National Cash Register a Cubond copper brazing paste No. 151, produced by Metals Refining Co., division of Glidden Co., Hammond, Ind., is used as a source of copper. The vehicle is a jelled synthetic petroleum material with extremely low ash and the copper is present as the red oxide in a very fine state of subdivision. The reducing gases in the furnace act on the oxide to produce the metallic copper required for brazing.

Gun Available for Manual or Pneumatic Use—Applicator guns of Glidden design are available which will, in accordance with the users' problems, apply the paste as an extrusion in the form of round, ribboned, etc., in definite quantities depending upon the trigger setting. These guns are for hand or pneumatic use as required.

The pneumatic unit that is available can be set up for hand or automatic operation and actuated by foot or hand air valves, (*Please turn to Page* 98)

Fig. 4—Plan view of continuous brazing line. This is one of three lines operating at this plant

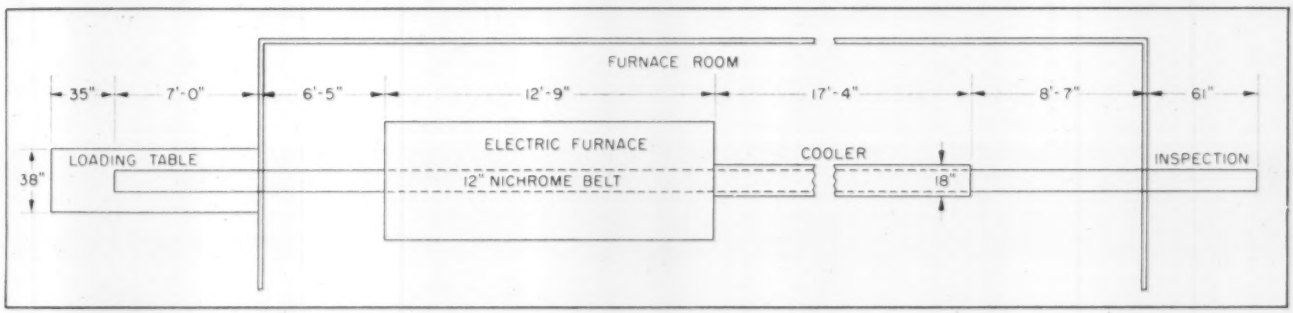
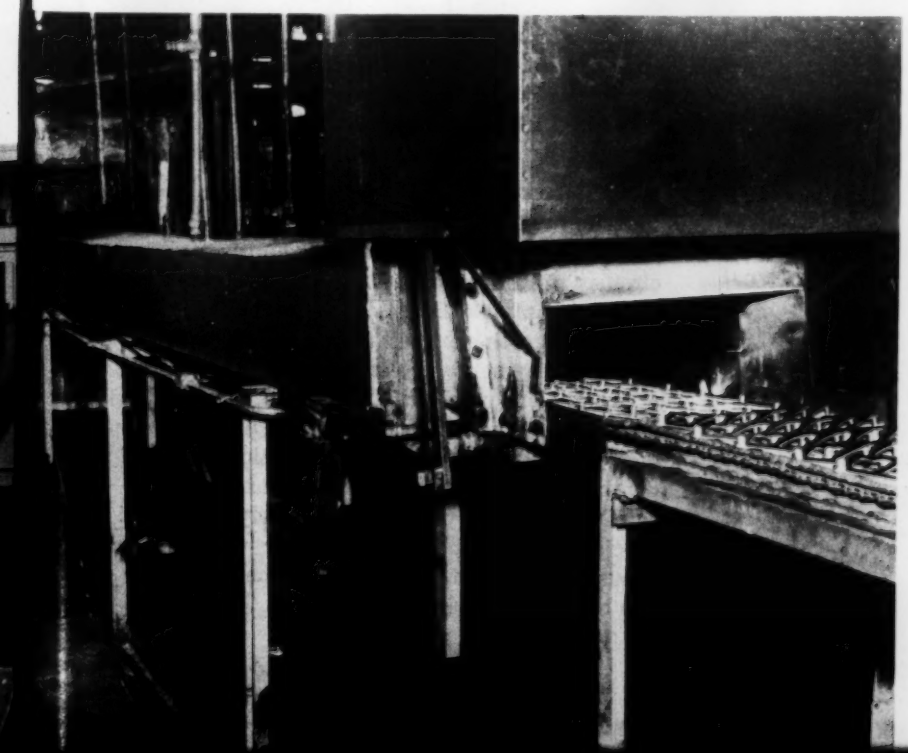


Fig. 5—View inside furnace room showing cooler tunnel leaving brazing furnace. Parts at right have been brazed and are ready for final inspection as they move into next room

Fig. 6—As components are removed from the continuous conveyor and visually inspected, they are placed in tote box seen at lower right and sent to cyanide bath for stripping off all excess copper



SEEN AND HEARD IN THE

By GUY HUBBARD
Machine Tool Editor

HOLD THOSE PLANTS! From time to time over the last four years I have had occasion to mention with sentimental regret—and likewise with misgiving—the fading from our industrial scene of this or that well-known machine tool company. The history of some of these companies reaches back as far as our Mexican War in 1846. All of them played important roles in the winning of World War II.

In some cases these companies simply have gone out of business and liquidated their assets. In other cases they have been absorbed by other companies which have consolidated operations in the main plant and closed up the plant of the absorbed organization. In still other cases operations of the purchased companies still are being continued in the role of branch plants.

The extent of this elimination and absorption within the machine tool industry is far greater than generally is realized—something like 40 companies already having been involved. Just how much further it has been planned to carry the closing of purchased plants and the further absorption of facilities, no individual knows.

Because of substantial revival of machine tool business since July, 1949, it is probable that quite a number of plants which were marked for elimination, have been "reprieved". In the light of world conditions in which we now find ourselves involved, those reprieves are nothing short of providential. It certainly is to be hoped that these reprieves will be extended. The capacity of these plants soon will be sorely needed to back up the critical United Nations venture for which our country has assumed major military responsibility. It may be "later than we think"—just as it was in 1939-40.

One reason why several of these plants are so important, is that they were built and are equipped to manufacture the kind of heavy machinery—boring mills, big planers, presses, etc.—which seldom are needed in large numbers except in times of national emergency. Their highly specialized facilities include inside railway tracks and floor level rail docks, powerful hoists and heavy cranes, and huge machine tools. Their engineering, patternmaking, foundry, machine operating and erecting men also are specialists both in talents and in experience.

Such groups cannot be reassembled simply by blowing the whistle some morning, nor are such plants rebuilt and re-equipped in a day, a week or a month or even in a year. Hold those staffs together—hold those plants!

LET'S BOOST STANDARDIZATION: Social scientists who are unfamiliar with the facts of industrial life often confuse standardization with regimentation—not only of products but also of workers who produce those products. Their conception of mechanized production is a stream of identical and inartistic products pouring out of a jail-like factory filled with crashing presses and other strange machines manned by beings dazed by noise, fatigue and monotony.

Standardization—as practiced in American industry today—actually does mean concentration on a reasonably limited number of carefully engineered models and sizes of any given product—the entire line being so designed that it can be built and assembled from a minimum number of sizes and kinds of components.

Such mass produced products can be—and generally are—extremely good looking. Through variations in certain details and in finish, they also can be given a considerable degree of individuality—as in the case of modern motor cars. More important than all that, they can be priced so that you and I and millions of others can afford to buy them.

Modern machine tools have played a most important role in successful production of satisfactory and good looking consumers' goods. Machine tools themselves, however, have been difficult to standardize. For this, customer pressure is largely responsible. Those same customers who complain about high prices of machine tools, are the very ones who too often demand wholly unnecessary "individualities" which boost the price by preventing standardization.

Now we face a situation which again may demand strenuous efforts on the part of the machine tool buiders to retool the "Arsenal of Democracy". Let's give serious thought to helping the American machine tool industry to make the most of its facilities through a reasonable degree of standardization of its own products. For example, don't order "Model A" machines with bored out spindles, if "Model B" machines will serve the same purpose without reboring. Don't order "Model C" machines with extended beds, if "Model D" machines will serve without alteration.

In this way you will get better machines much quicker and at less cost. At the same time, you will not be tying up the hard-pressed machine tool builder on alterations when he should be building more vitally needed machines for other customers who are standing in line awaiting delivery.

GROUND FORMING TOOLS: One of the finest contributions that precision grinding has made to mass production is in the finishing of vertical and circular forming tools used for producing intricate shapes in automatics.

Years ago these tools were made in shapers and in lathes, then merely polished after hardening. Their accuracy left much to be desired. Today they are ground after hardening to "gage" limits. In the case of vertical tools, exact mathematical corrections to depths and angles compensate for tilting.

When diameter of work is properly controlled, these precision tools go on week after week reproducing thousands of parts identical in shape to that which has been "ground into them".

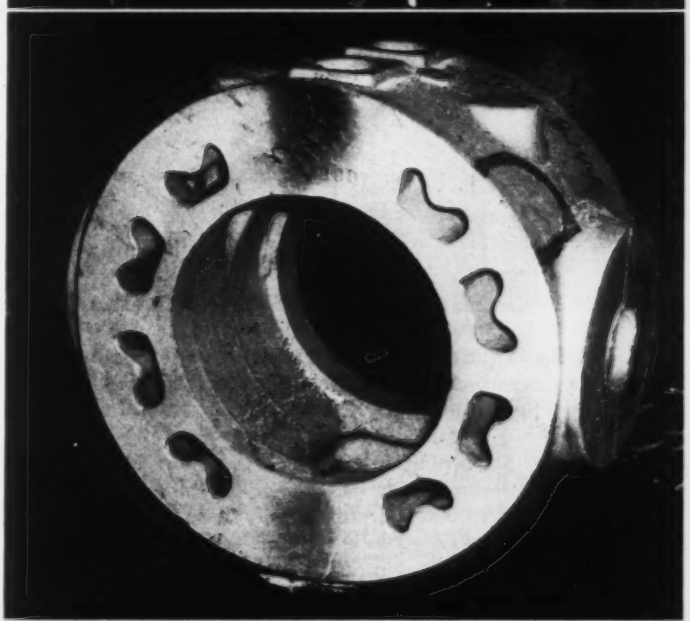
Nodular Iron's Record — *Two Years Later*

Performance data gradually being accumulated presage a strong role for nodular graphite cast iron as an engineering material. Since its introduction at the American Foundrymen's Society meeting in May, 1948, nodular iron has been the subject of almost feverish research. Results of the experimental work and some facts as to how the new material stands up under service conditions are summarized here

PERFORMANCE of nodular cast iron parts in actual service is now beyond the point of mere speculation. Enough applications have been made during the last 12 months to indicate a healthy acceptance of so-called "ductile iron."

For a first-hand check on magnesium-treated cast iron's actual position as an engineering material, STEEL's editors asked all licensees under International Nickel Co.'s patents to comment on their experience with the material. Many companies reported that their work is still entirely experimental. Here are the responses from some of those producing ductile iron commercially or who have reached some definite conclusions as to the material's usefulness.

CHAMBERSBURG ENGINEERING CO.—This company is one of the pioneers in the application of nodular cast iron in the heavy machinery field. The 6500-pound forging hammer cylinder shown in Fig. 1 illustrates one of the many large castings produced of this material under the trade name ductile Cecol-



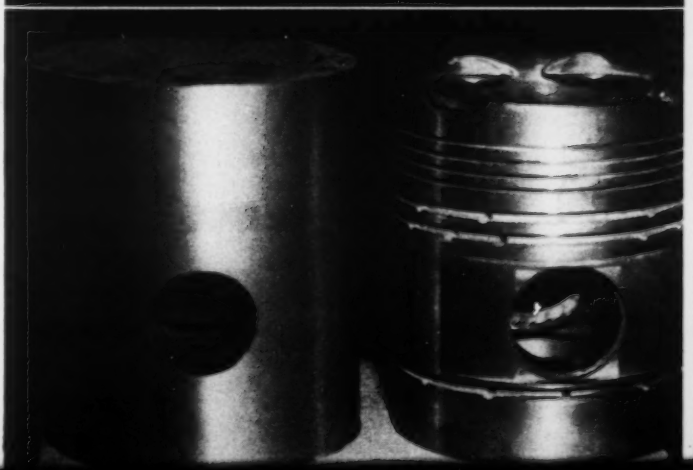


Fig. 1 (top)—This 6500-pound nodular cast iron forging hammer cylinder has been in service about 7 months

Fig. 2 (center)—Gas compressor body made of ductile iron operates under continuous discharge pressures of 1000 to 2000 psi

Fig. 3 (bottom)—Lightweight iron piston 9 inches in diameter used in high-speed high-output diesel engine. One such piston, subjected to a hydrostatic test, withstood a pressure of 9800 pounds

loy. In the past 12 months Chambersburg has produced over 300 tons of nodular iron castings ranging in weight from 1000 to 60,000 pounds. Volume of orders for the material is showing a steady rise as its special properties become known.

Hammer Performance Good—The hammer cylinder shown has been in service about 7 months. Service reports, indicate that its performance will be all that was expected. Properties leading to selection of ductile Cecolloy for this particular application were: Vibration dampening and self-lubrication, high yield strength and endurance limit.

Forging hammers are subjected to extreme service conditions of shock loading, vibration and wear from both friction and impact. Many wearing surfaces of the hammers cannot be satisfactorily lubricate...

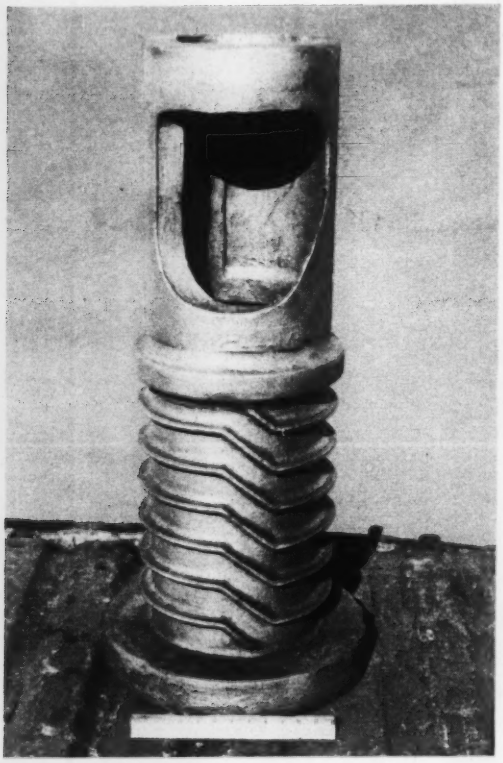


Fig. 4 (above)—Cylinder bushing used in plastic extrusion presses. Ductile iron has been used successfully in this part over a period of several months

Fig. 5—Forging furnace doors cast of high carbon iron, treated with nickel magnesium alloy and annealed to a ferritic structure. These doors operated for 17 weeks in service 24 hours per day

LYNCHBURG FOUNDRY CO.—Max Kuniansky, vice president and general manager, writes that his company has been a licensee of the ductile iron process for 18 months. During that time they have sold only a limited quantity of this material for specific applications. "Most of our work," he says, "has been done in the development field. At the present time we can say that ductile cast iron is applicable to the manufacture of cast iron pipe as we make it by the De-Lavaud process.

"Product made from ductile iron has physical properties on the order of two and one-half to three times those of the present product. It offers the possibility of reducing weight, in taking advantage of the engineering properties and toughness of this new material. It should readily find application in the water, gas and oil fields, as the material lends itself readily to welding."

Makes 12-Ton Kettles—In the engineering castings field, the company has made some kettles weighing about 12 tons each. Properties of nodular iron should give the user the advantage of a material that will not fail suddenly in this type of service.

"The process and product being relatively new, it is reasonable to assume that with the terrific amount of development work being done by International Nickel Co. and many of its licensees, as well as by others in the field who are not licensees, the process will be reduced to a commercial application basis that will be economically sound. As is the case with developments of this kind, it should broaden the field of application of ferrous castings rather than serve to displace present uses of ferrous materials."

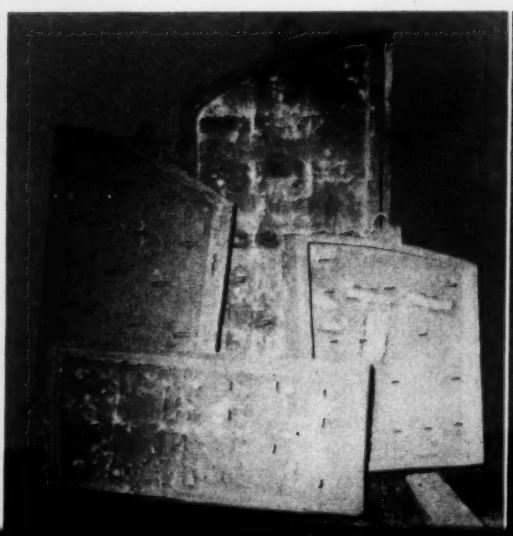
THE COOPER BESSEMER CORP.—Fig. 2 shows a compressor body, cast in nodular iron by Cooper-Bessemer. Physical properties are:

Tensile Strength	76,200 psi
Yield Point	58,300 psi
Elongation	5%
Endurance Limit	34,000 psi
Weight	2400 pounds

Tensile strength and endurance limit were obtained from test specimens cut from a 1¾-inch section of the casting itself.

According to T. E. Eagan, chief metallurgist, his company has found it possible to replace steel cast-

Fig. 6—Ductile iron gear box covers have high ductility and impact strength



ings which were formerly used for this part under continuous discharge pressures of 1000 psi to 2000 psi. The steel castings previously used had the following physical properties:

Tensile Strength	72,500 psi
Yield Point	46,250 psi
Elongation	23.5%
Endurance Limit	24,000 psi

By producing the nodular iron castings in its own foundry compared to buying the steel castings outside of the plant, the company effects a reduction in price to the customer of about 20 per cent on the complete compressor cylinder in which this part is used. So far, only seven of these large gas compressors have been shipped into the field with nodular iron components.

Fig. 3 illustrates a light weight iron piston 9 inches in diameter used in a high speed high output diesel engine of the locomotive type. Eight of these have been successfully cast in nodular iron. One was subjected to a hydrostatic test and withstood a pressure of 9800 pounds, without fracture, although a class 40 iron piston of the same design broke at 5300 pounds.

Increases Piston Life—The high physical strength of this material along with its excellent resistance to growth indicates that nodular iron pistons can contribute greatly to the increased life of pistons in high output diesel engines. It is estimated that the use of nodular iron in this part will not increase its cost more than 7½ per cent.

The cylinder bushing in Fig. 4 is used in plastic extrusion presses manufactured by the National Rubber Co. of Akron, O. Ductile iron has been used successfully over a period of several months in this part. Here the material replaced an ASTM A48-48 class 50 gray iron. Physical properties were recorded on a test bar cut out of the wall of the casting itself:

Tensile Strength	72,500 psi
Yield Point	56,250 psi
Elongation	10.5%

TREADWELL ENGINEERING CO.—C. C. Brownmiller, manager of casting sales writes:

"We manufacture castings for heat resisting service by the electric furnace process and have had no difficulty in producing a first-class product. We are guaranteeing minimum tensile strength unheat-treated of 90,000 psi and heat-treated of 70,000 psi with elongation of 12 to 16 per cent.

"We have had no failures in service and while we believe that ductile iron castings will outwear materials previously used, as is indicated by their performance, until the units wear out, no figures on comparative life can be given."

UNITED ENGINEERING & FOUNDRY Co.—"Properties and structure of annealed ductile iron," writes C. A. Karns, research metallurgist, "make it an ideal material for heat-resisting applications. The graphite in the form of nodules together with a ferritic structure impart considerable resistance to growth at high temperatures.

"Gray cast iron has been used with some success for doors on forging furnaces, but with continuous operation at high temperatures, the service life is relatively short. This is due, principally, to excessive growth and oxide penetration of the metal."

Considerable difficulty with gray cast iron doors for forging furnaces was being experienced at one plant. These doors heat cracked after short life so several doors were cast of ductile iron for service trial. The doors, Fig. 5, were cast of high carbon iron, treated with nickel magnesium alloy and annealed to a ferritic structure.

Service comparison with regular gray cast iron doors is shown below:

24 hours continuous service per day

Gray cast iron doors	4 weeks
Ductile cast iron doors	17 weeks

Another application for nodular iron which is dependent on high ductility and impact strength is machinery gear box covers. Fig. 6 shows gear box covers cast of ductile iron. Formerly, these castings were ordered of cast steel since breakage had been encountered with gray cast iron. Cast of ductile iron and annealed, the gear covers have good impact strength with high ductility and can be made at lower cost than the steel castings. While the notched impact strength is lower than cast steel, the unnotched strength is eight to fifteen times greater than gray cast iron.

Produced from Cupola Metal—The castings are produced either from cupola or air furnace metal and little difficulty is encountered, either in the treatment

Fig. 7—Two cavity block halves and finished rubber bag product. Cavity blocks are 20 x 30 x 36 inches and weigh 2900 pounds each. These nodular iron mold castings are subject to continual rise and fall of temperature and to a constant steam pressure of 150 pounds

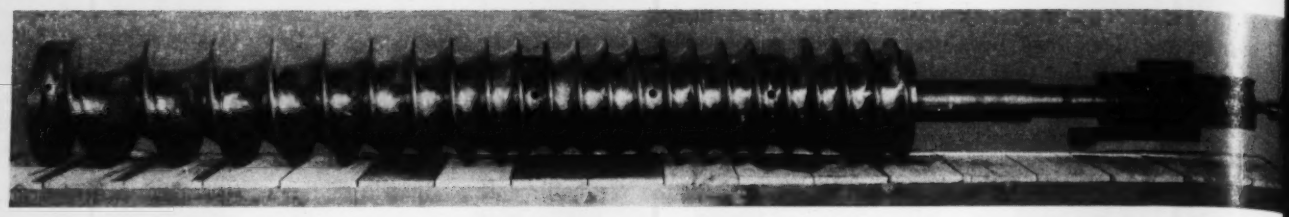


Fig. 8 (above)—This screw press worm takes liquor from paper pulp by a squeezing action. Ductile iron worms give long wear and service

Fig. 9 (right, above)—"C" clamps shown here vary in size from 1 to 6 inches. Sections are from 1/8 to 1/4-inch thick

Fig. 10 (right, below)—Power lawnmower parts. These parts must be tough enough to withstand not only ordinary service stresses, but even abusive service. Note how parts can be bent

or the casting. The metal has very good fluidity and the most intricate castings can be cast successfully.

"Machinability of ductile iron," Mr. Karns says, "is superior to that of steel and closely approaches gray cast iron of the same hardness. Drilling, sawing, milling and thread cutting have all been done without difficulty, and the machined surface is smooth with no tearing.

"Many other applications of this new high strength iron are being made, and as more metallurgical knowledge of ductile iron is determined, other new uses will be developed."

VALLEY IRON WORKS CO.—Fred Freder, foundry superintendent: "Generally speaking we have found certain characteristic physical advantages which are the combined make-up of ductile iron and make its use highly desirable for almost any type of casting. In this light our company has had the advantage of foundry production guided by results of machining data obtained in our own machine shop.

"Characteristic of ductile iron have been these qualities: Very close grain structure, develops high polished finish, welds easily and successfully, high tensile strength, excellent wearability, is free from casting growth problems and its physical qualities can be varied according to the demands of the casting.

Production Problems Vary—"Production problems of ductile iron vary with each particular group of castings. Each group has different gating and riser problems that must be worked out in actual foundry experience. We have produced various types of castings ranging in weight from 5 to 4100 pounds with wall thicknesses up to 4 inches."

Ductile cast iron rubber molds which demand all the above qualities have been produced. Fig. 7 shows two cavity block halves and the finished rubber bag product. These cavity blocks are 20 x 30 x 36 inches and weigh 2900 pounds each. Mold castings are subject to continual rise and fall of temperature and to a constant steam pressure of 150 pounds. Physical properties are: Tensile strength 90,000 psi; yield strength 65,000 psi, elongation 8.1 per cent, reduction of area 7.7 per cent and Brinell hardness 197.

Easily Welded—Wearability and lack of casting growth problem made ductile iron desirable from the standpoint of economy. Fact that castings are easy to weld can permit in some cases a change in design or dimensions without scrapping the casting.

Screw press worms whose function in the paper industry is to take liquor from the pulp by a squeezing action have also been made, Fig. 8. These worms are driven by a 125 hp motor and are subjected to a great deal of stress, strain and wear.

Ductile iron worms will give longer wear and service. One of these worms had tensile strength 115,900; yield strength 76,800; elongation 6.0; reduction of area 5.0; and Brinell 235. Each worm weighs 2800 pounds and is 10 feet 4 inches long.

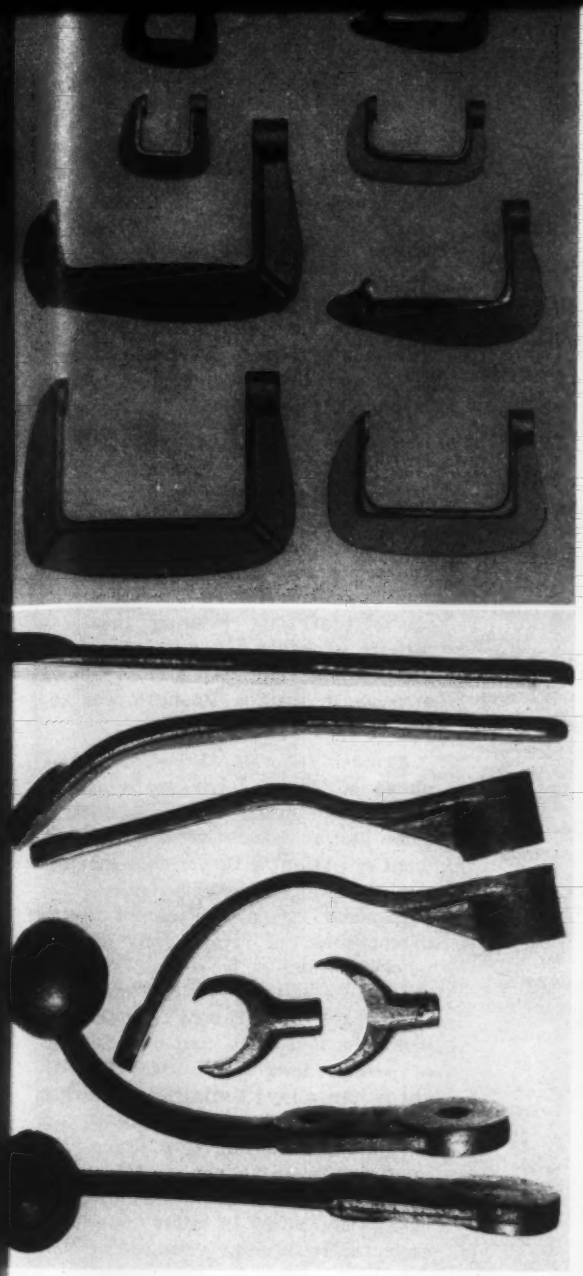
ALBION MALLEABLE IRON CO—C. L. Carter, president, advises that his company is not actually producing nodular, but they have produced some 130 experimental heats of this material. "We have come to the present conclusion that nodular iron, particularly in light sections, cannot be produced with consistent quality and in order to meet the requirements of our customers, we find that an annealing operation is necessary.

Cost Too High—"Under these conditions we find the cost involved in producing nodular iron is considerably in excess of producing malleable iron and the results are not consistent in quality. However, we did find that heavy section castings could be made successfully in nodular iron, but that we have no current occasion to produce this type of casting.

"Under these conditions we have ceased further work on nodular iron. However, we intend to follow its development in case this type of product becomes practical for our production and can be made economically.

"In the light of our experience we are considerably perturbed at some of the fantastic claims that are being made by producers of nodular iron, particularly when their results are compared to substandard malleable iron. This type of publicity certainly is injuring the cause of nodular iron rather than improving it."

KUTZTOWN FOUNDRY & MACHINE CORP.—This company has found that in the cast condition, ductile cast iron up to 300 to 320 Brinell can be subjected, without difficulty, to a considerable variety of cutting operations, both under experimental and production conditions, and including lathe turning, drilling, milling, shaping and sawing. It is as free machining as gray iron of the same hardness, but much superior to gray irons having equivalent transverse of tensile strengths. The cut surface tends to be smoother with less tearing than gray iron experiences. In lathe turning, ductile cast iron forms a broken chip. In the annealed condition, it tends to cut more like steel, with a continuous chip.



According to Kutztown engineers, the ductile material can be readily arc-welded following the techniques established for gray irons. In using the modern types of weld rod for machinable welds, such as Ni-Rod, or similar types of electrode, no difficulty has developed from cracking, but there are some indications of greater hardenability along the weld margin. However, a new type of rod has been developed lately, which produces successful welds with ductile iron.

Casting Quality Excellent—Casting quality, after spheroidizing process treatment is excellent, fluidity is about the same as gray iron of similar base composition.

Potential applications for this new material are many and varied. The automotive, agricultural implement and railroad industries could apply it, both as-cast and heat treated in numerous component parts. Machinery in general, including machine tools, crank shafts, pumps, compressors, valves and heavy industrial equipment such as rolls and rolling mill housings, could readily utilize its high strength and rigidity. Its ductility may provide thermal shock resistance far greater than has been available in high carbon castings heretofore.

ACME SHEAR CO.—Acme specializes in small, light-sectioned production castings, made generally from matchplate patterns and molded in snap or slip flasks. Daily production is about 2 tons of castings varying in weight from 1/3-ounce to over 40 pounds. Ductile iron castings are regularly produced with sections varying from 3/32 to 1 inch.

According to Emil J. Laufer, foundry superintendent, dependability of the process is indicated by the fact that his company has sold well over one million individual castings. At least as many castings are on order at the present time. Several castings have been produced in lots of over 100,000 pieces and repeat orders have been received for the same castings in similar quantities.

An example of one of the first large repeat orders is shown in Fig. 9. These "C" clamps which were thoroughly tested by the manufacturer, vary in size from 1 to 6 inches. Sections are from $\frac{1}{8}$ to $\frac{1}{4}$-inch thick. Yoke of an annealed casting can readily be bent 90 degrees without failure. Some castings will withstand a 180-degree twist, and some when finally cracking on the inside will tear longitudinally. This is sufficient ductility for this use. As for strength, tests on a 2-inch "C" clamp indicate a total load to yield of 1508 pounds.

Typical analysis of ductile iron:

C	3.52
Si	2.39
Mn	.24
P	.077
S	.017
Ni	1.5
Mg	.090

Acme engineers maintain that gates must be designed especially for ductile iron castings. With a few exceptions, they have found it possible to produce acceptable castings by regating. Most of the work is mounted on matchplates, and most of the original gating was in accordance with good malleable iron practice. In almost every case, the gates and risers were redesigned for ductile iron.

"Sands," Mr. Laufer says, "have presented no problem. We use a fine synthetic green sand designed for gray iron castings. This sand is bonded with a carbonaceous resin and southern bentonite." Properties of the sand:

Green Strength	12 lb
Permeability	20
Moisture	4—4.5%

"Thin-walled magnesium-containing iron castings seldom have any ductility in the as-cast condition since the high mold cooling rate produces a matrix structure of very fine pearlite with possibly some excess carbides. Therefore, an annealing treatment is required to develop high ductility in these thin-walled castings. We have experi- (*Please turn to Page* 100)

Know Your Nondestructive Testing Methods

Important thing to remember about nondestructive testing for a "pay off" is to learn how and when to use various methods available, ASTM members told during society's 53rd annual meeting. Developments in ductile chromium base materials, ceramic coatings, grinding and austenitic chromium steels also revealed

BETTER reappraise nondestructive testing if you are interested in making further cuts in manufacturing costs. If used correctly, it can save you considerable money—simply by learning how to make it work effectively for you.

In Atlantic City during the American Society for Testing Materials sessions, June 26-30, C. D. Moriarty of General Electric stated that money can be saved in the shop by using nondestructive tests. Half the secret, he says, is using it on metals at the right place at the earliest stage it can be applied.

The right time, he states, may be in the supplier's plant; again it may be in the first or possibly the third operation in your own plant.

The other half of the secret, he emphasizes, is to know the advantages or capabilities of the various nondestructive methods available.

Application in Reverse—"Why use the Magnaflux method in checking the surface of a piece requiring several machining operations", he asked, "if later on through an ultrasonic test you find that the work has an internal flaw."

He says subsequent machining, welding and any other costly operation is simply thrown out the window if an internal flaw is discovered in the work after it has undergone all these operations.

The thing to do, he explains, is to check for the internal flaw first, then proceed with the machining or other processing applying the Magnaflux or other necessary test later.

Test As You Go—Management, he said, also should explore advantages that may be derived in testing parts in motion. This idea is paying off everywhere used by General Electric. The dollar savings might surprise you.

The discussion during the meeting revealed that there was a definite need for the design and test engineer to get together to bring about a meeting of the minds as to the proper basis of accepting or rejecting material.

One ASTM member stated that if these two do not get together—that is the test and design engineer—nondestructive tests cannot be applied effectively. A meeting of the minds also would go a long way in clearing up many of the suppliers' headaches in trying to meet specifications.

Four Tips for Saving—L. W. Ball of the Naval Ordnance Laboratory suggested four simple rules for management to follow if it wants to cut costs through nondestructive testing.

He says: First, make sure that someone that knows nondestructive testing is included on your "engineering team"; second, always use the test when contemplating developments; third, make certain all variables are taken into consideration; and finally, keep cost accounting data on research and development with nondestructive testing.

Destructive tests said John W. Juppenlatz, chief metallurgist of Lebanon Steel Foundry, are costly and prove nothing. Hydrostatic bursting or loading castings to ultimate failure require expensive equipment.

What they reveal applies only to the particular casting tested and do not mean that castings made by the similar procedure are equivalent. Furthermore, cost is increased by destroying the casting which, incidentally, no one knows how it would have behaved in service.

Wards Off Corrosion — Ceramic coatings, according to W. N. Harrison, National Bureau of Standards, should not be overlooked when working with metal at high temperature. He said they provide adequate corrosion protection against leaded fuels in aircraft application. A heat exchanger, given a ceramic coating, he pointed out, was heated to 1850° F, immediately plunged in water without flaking the coating.

Just Around the Corner?—The possibility of obtaining ductile chromium base material looks a little brighter to Battelle Memorial researchers. An inkling that there may be hope was revealed during a discussion of a paper on the subject by W. [illegible] Havekotte, C. T. Greenidge and H. [illegible] Cross of the institute. Currently, chromium base alloys are brittle at room temperature. Evidence of ductility was found when high purity chromium was tested.

Shot Does the Trick—L. P. Tarasov, Norton Co., says grinding tests still in preliminary stages so far indicate that grinding imposes no detrimental effects on hardened steel. The tests, still underway to find out what causes grinding cracks so far reveal that shot peening increases fatigue strength of test pieces by some 30 per cent. An almost similar increase in fatigue strength was obtained by tumbling.

Avoided Like Measles—That sigma phase in metals—the metallurgical condition which metallurgists "welcome like measles"—drew much comment in Atlantic City. One member put it mildly when he said, "The presence of sigma phase is not always detrimental but is generally avoided wherever possible."

In a report by J. W. Putman, N. J. Grant, and D. S. Bloom from MIT, it was revealed that under conditions of slow cooling from 1370° C, high chromium alloys containing less than 65 per cent chromium and 20 per cent molybdenum develop sigma. Alloys with over 15 per cent iron and 20 per cent molybdenum did likewise. Thus, the 60-25-15 alloy might be expected to develop a minute amount of sigma under these conditions.

At 1300° C, alloys with over 52 per cent chromium do not contain sigma. This is also true of alloys containing less than about 12 per cent molybdenum. The 60-25-15 alloy is then well outside of the sigma region at 1300° C. At this temperature there exists a region of alloys containing nothing but sigma.

Power of Steam—Two Baltimore consulting metallurgists, C. A. Zapffe and F. K. Landgraf reported that steam is a powerful hydrogenizer of steel when contacting the metal at elevated temperatures. They stated that all class 1 or hardenable stainless steels are susceptible to embrittlement by the steam metal reaction and even certain class 2 steels such as type 430. Type 410, designed for steam turbine service as type 403, will bend a full 180 degrees when quenched from a dry furnace atmosphere, but will frac-

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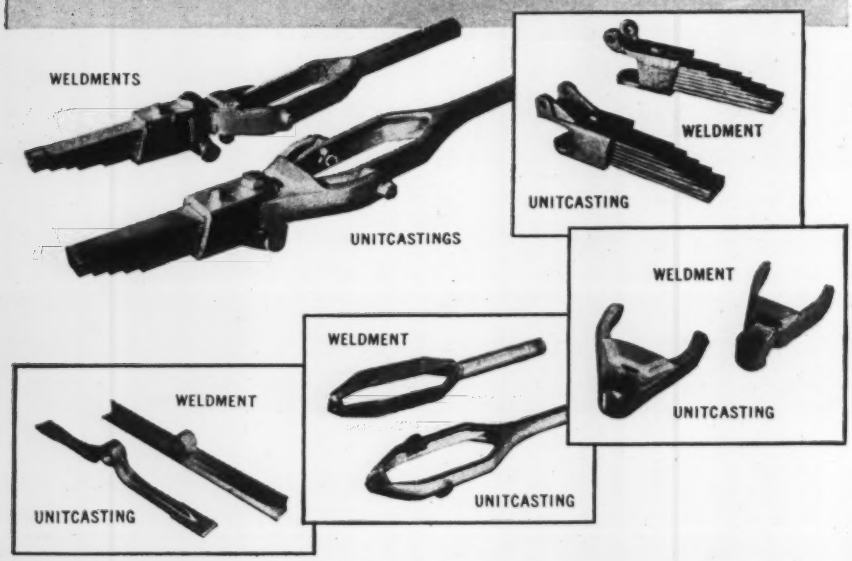
TRAILER HITCH MAKES 4-WAY SWITCH..



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ture at angles as low as 15 and 20 degrees if exposed to steam during its hardening heat treatment.

This powerful effect of steam in the heat treating atmosphere is even realized within an exposure time of only 1 minute, virtually the same embrittlement resulting when steam is admitted to a dry furnace atmosphere in the final minute of the heat treatment.

Additives Help Resist Creep — Manganese up to 1 per cent or more, and cerium up to 2 per cent are very beneficial in manganese cerium wrought alloys for high temperature service. This was revealed by a systematic study conducted by K. Grube, J. A. Davis, L. W. Eastwood of Battelle Memorial Institute. They say that data obtained to date indicate definitely that it is mainly the manganese and, to some extent, the cerium in solution at the heat treating temperature which have a beneficial effect on the creep properties of these alloys.

Cerium, they pointed out, is primarily responsible for good tensile properties at 600° F, but it is manganese which imparts good creep resistance.

Too Much Hurts—It was noted, however, that the employment of both cerium and manganese in an alloy makes it possible to obtain good creep resistance without rapid quenching from the solution heat treating temperature. Increasing the cerium content to an amount greater than that which is soluble appears to have a harmful effect on the creep resistance of extruded rods, though this did not appear to be the case with castings.

While these factors certainly are the underlying ones determining the creep properties of the magnesium cerium manganese wrought alloys, there are many variations from heat to heat and even from one test specimen to another from the same heat.

Freezing Increases Hardness—Austenitic chromium nickel steels can be made unusually hard by plastically deforming them at subzero temperatures. This added hardness can be observed after mechanical working at about minus 50° F and progressively increases as the working temperature is lowered down to about minus 300° F.

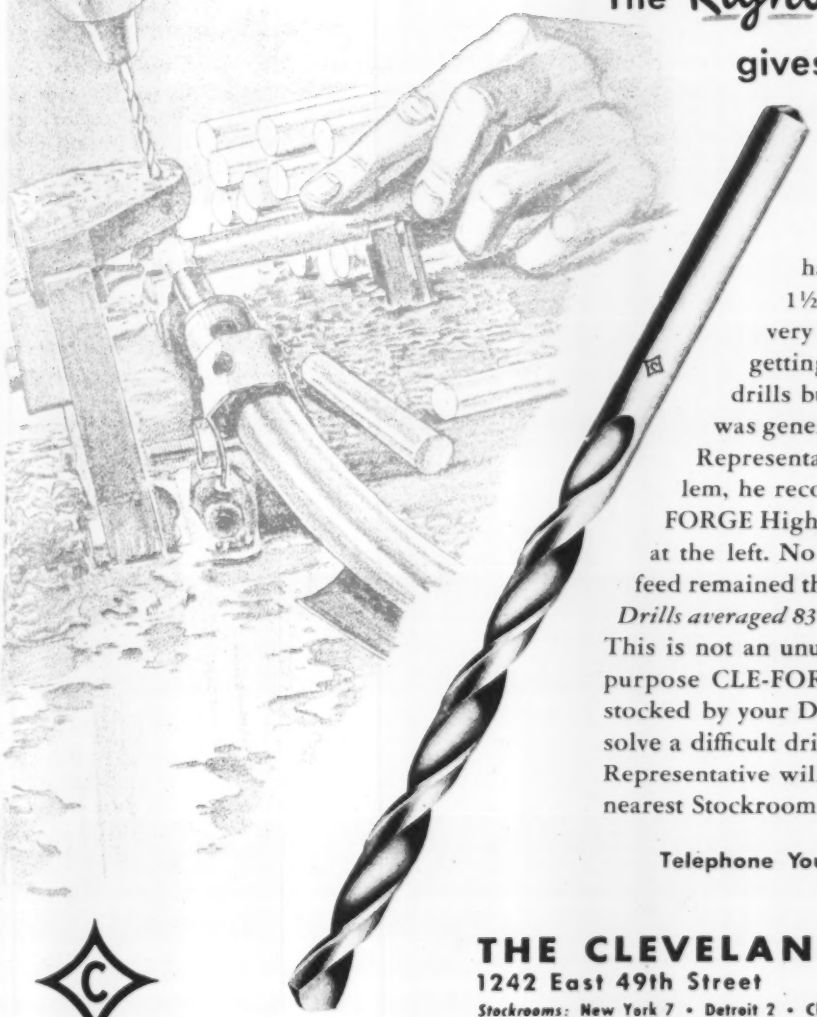
According to N. A. Ziegler, Crane Co., and P. H. Brace, Westinghouse Research Lab, the hardness values thus obtained can be increased still further by a subsequent aging heat treatment at about 750° F.

Other physical properties are affected in the same proportion as

HOLES PER GRIND

Increased from 8 to 83!

The *Right* CLE-FORGE stock drill gives spectacular performance



A farm implement manufacturer was having trouble drilling small holes 1½″ deep in a shaft made of 1019 steel, very hard. Using regular drills, they were getting only 3 to 8 holes per grind. The drills burned on the corners from heat that was generated. When a ***Cleveland*** Service Representative was called in to solve the problem, he recommended the special purpose CLE-FORGE High Speed Drill, a stock item, illustrated at the left. No other change was made; speed and feed remained the same. *The CLE-FORGE High Speed Drills averaged 83 holes per grind . . . ten times more!* This is not an unusual case. There are several special purpose CLE-FORGE High Speed Drills, regularly stocked by your Distributor, which often can help you solve a difficult drilling problem. A ***Cleveland*** Service Representative will be glad to advise you. Contact our nearest Stockroom, or . . .

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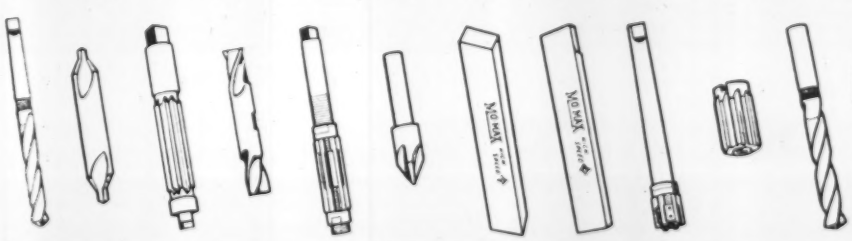

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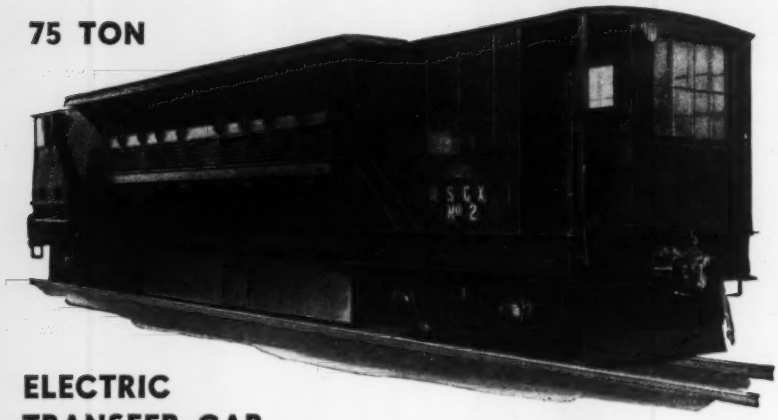
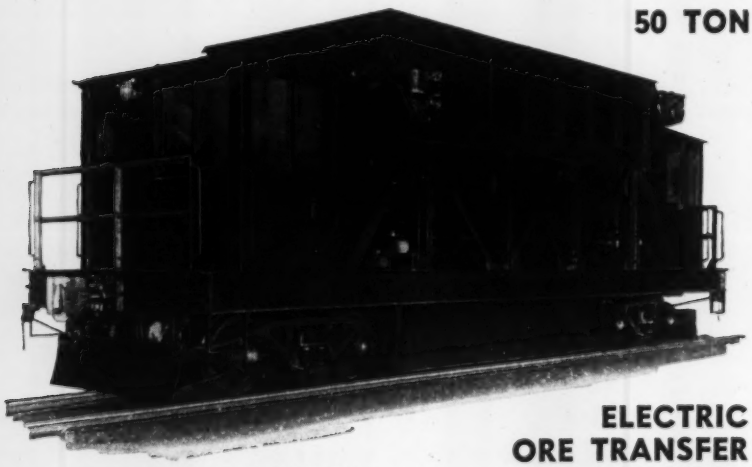


ELECTRIC
TRANSFER CAR
GABLE BOTTOM

Car built in two sections with independently operated discharge gates for either side of track. Car has self-aligning journal bearings, electric heaters and is propelled with two 75-HP motors. Equipped with air brakes, sanders and standard safety equipment.

50 TON



GABLE BOTTOM

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hardness so that in an 18-8 strip rolled at minus 300° F and aged at 750° F, the following values can be obtained: Tensile strength 295,000 psi; yield stress 290,000 psi; proportional limit 264,000 psi; elongation 2 per cent and reduction of area 24.8 per cent.

The response of these treatments, the authors say, can be controlled by adjusting the iron chromium nickel ratios as well as by adding, as alloying elements, austenite promotors such as carbon and nitrogen or ferrite promotors such as molybdenum, columbium and titanium.

Transverse Induction Heating

INDUCTION heat treating has been seeing increasing use in the processing of magnetic strip. But for nonmagnetic strip — that's a different story. Because of low power factor and inefficiency, and because the small cross-section of the nonmagnetic strip intercepts only a very small percentage of the flux through the inducing coil, conventional radio frequency induction heating is not used on such materials as aluminum, brass, copper, magnesium and stainless steel.

Developed by Westinghouse Electric Corp., Baltimore, is a technique called transverse flux induction heating which is said to make this type of treatment satisfactory for these materials. Difficulties of conventional RF heating are overcome by directing the magnetic flux perpendicularly to the strip surface and through the strip, instead of along its length.

Objective Accomplished — Strip is heated when it passes between two opposing laminated pole structures. Field coils, supplied with alternating current, are oppositely polarized so that flux is forced through the strip. With the exact amount depending upon strip thickness and its resistivity, frequencies of from 60 to 10,000 cycles per second are used.

Is use being made of the new technique? Westinghouse states that although transverse flux induction heating is still in the experimental stage, it is proving itself very effective. Two experimental 300-kw pilot line installations have been made and are in successful operation.

How To Unload Caustic

AVAILABLE from Manufacturing Chemists' Association, Washington, D. C., is revised manual sheet TC-3, incorporating recommended practices for unloading liquid caustic from tank cars. The best known procedures and safety precautions are included in the publication, offered at 20 cents each.

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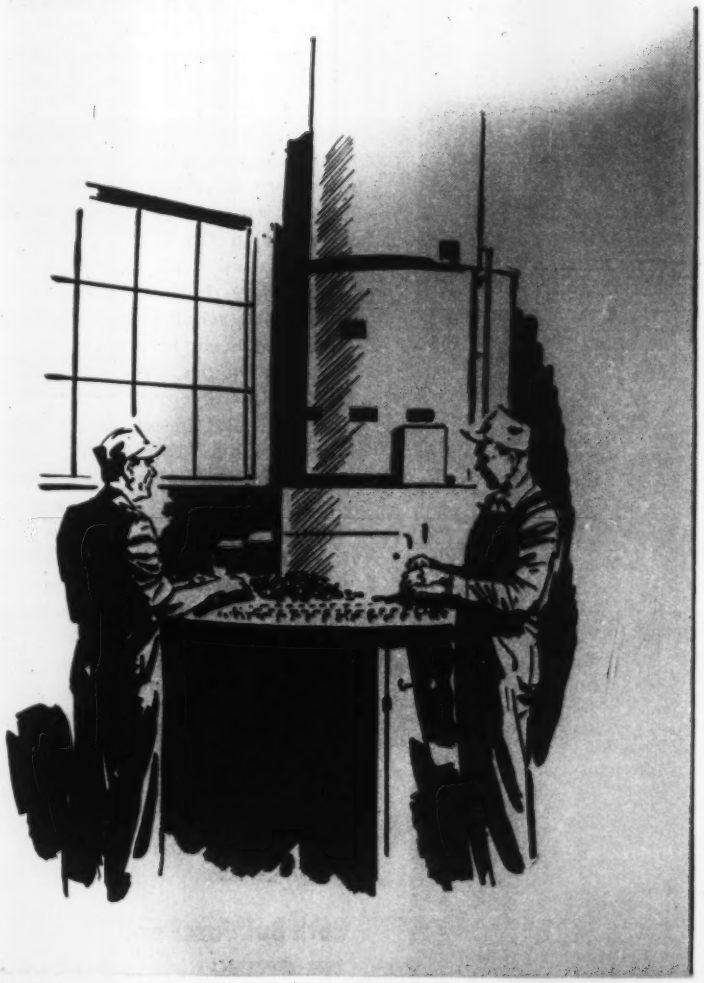
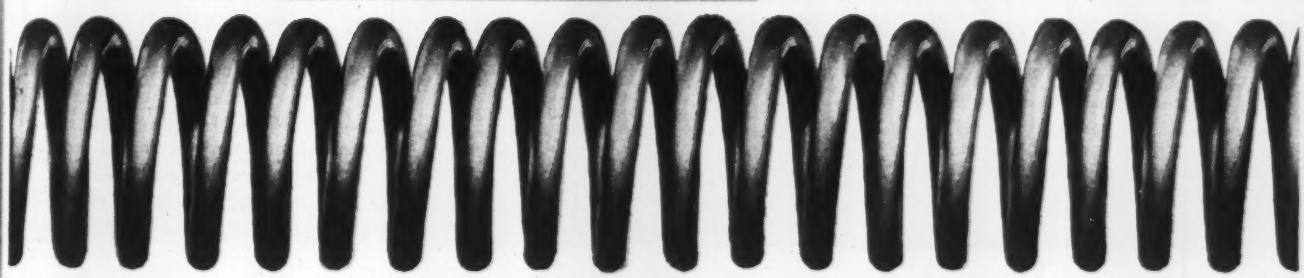
for Oil-Tempered Spring Wire... and production records tell why!



A MANUFACTURER'S own tests are absolutely necessary. But how his product performs in plants all over the country is the real proof of the pudding! And it's a matter of record that Roebling Oil-Tempered Spring Wire brings users fewer machine stoppages, and cuts down rejects.

Roebling has one of the largest specialty wire mills in America. From steel-making to finished wire, Roebling techniques and the most modern precision machines ever built assure a product that is always uniform in mechanical and metallurgical properties . . . that saves you preparation time and brings faster, smoother operation!

Have your Roebling Field Man help you choose the Oil-Tempered Spring Wire—or other round, flat or shaped wire—that will be best for your product and your production. John A. Roebling's Sons Company, Trenton 2, New Jersey.



Roebling makes a wide range of Round and Shaped Wires in various grades of steel. Some are also available in other metals, including copper and copper alloys.

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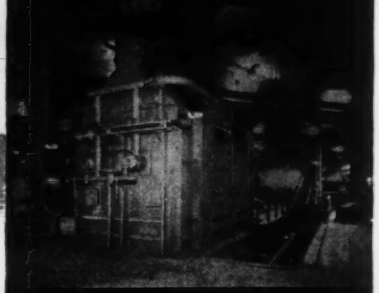
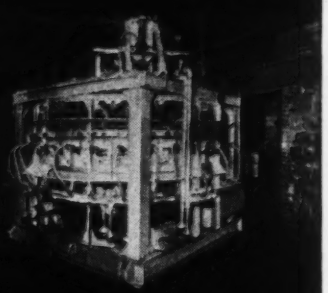


Continental Special Automatic Pig Molding Machine complete with automatic charging, melting and pouring.

Continental Automatic Production Line operating from raw materials to completely finished and packed product. This production line consists of fifteen integrated, synchronized, special automatic machines.



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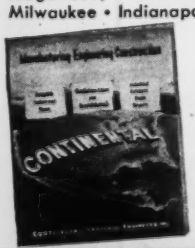

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SPECIAL MACHINES
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MANUFACTURERS—ENGINEERS—CONTRACTORS FOR OVER A QUARTER OF A CENTURY

Carbide Insert Tools

(*Concluded from Page* 81)

or soft steels, neutral or positive rake angles may be needed. Rakes can be ground into round, or even square and triangular inserts by merely grinding a concave into the top surface. Roughly speaking, use square inserts for turning and facing wherever possible, triangular inserts for clean-up operations, square corners for easily deflected work, use square or rectangular inserts for chamfering, and round inserts for finishing or tracer contouring.

A chip problem may be presented by the large front section when two or more holders are used close together in a tool block. Chips are likely to wedge between the holders and are likely to cause wear because the holders are 0 degrees vertical with no relief in the holders. This situation does not exist in brazed on carbides where the tool holders are provided with relief angles on the carbides and secondary relief angles on the tool holder. To eliminate this problem merely grind a chip breaker into the solid insert. Even with the chip breaker the insert may be turned in its holder and used any number of times before regrinding becomes necessary.

Definite Economies — Specifically, what has been done with solid insert carbides? How definite are the economies which can be realized? Ultimate benefits from solid carbide inserts depend largely on the judicious use to which they are put, and the close co-operation which exists between the user and the carbide manufacturer. Case histories on p. 81 illustrate some of the benefits users have derived from their use of solid carbide inserts.

Both Bulldozer and Shovel

THROWING its load overhead to discharge is the No. 104 RockerShovel for handling of bulk materials, a development of Eimco Corp., Salt Lake City, Utah. It may be used for loading and bulldozing. The straight forward and backward motion eliminates the necessity of turning around to dump. Construction is of abrasion-resistant alloy-steel. Machine may be equipped with diesel engine or electric motor.

Sulphur Prevents Discoloration

SOME manufacturers of stainless steel are now shipping bar stock packaged in corrugated boxes which have powdered sulphur in many of the corrugations to prevent discoloration of the product while in transit to the customer.

WHAT THE BELL TOLD—

When the Liberty Bell announced our freedom 174 years ago this month, it told all the world a story of mankind's progress. The ancient bell is cracked and silent now, but the freedom it signaled is as vital as ever. It is ours to cherish and protect.

The Wisconsin Steel organization believes that progress and competition are marks of freedom. They make freedom live. Unhampered by tyranny and oppression, we have moved steadily forward, constantly improving our products to compete with other steel producers. We shall continue to do so and our customers will benefit. It is our contribution to our continued freedom, a priceless benefit that we all enjoy.

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THIS DIFFERENT KIND OF STEEL CAN REVOLUTIONIZE YOUR PRODUCTS...
Give Them Gleaming Corrosion Resistance
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PERMACLAD combines the surface characteristics of stainless and the easy forming qualities of mild carbon steel. You can cold-form PERMACLAD with ease—subject it to deeper draws without intermediate annealing—actually form it into products impossible with many other materials. Yet, even with the most severe draw, the percentage of cladding (usually 10% or 20%, but more or less if required) never varies. And the stainless layer remains inseparably bonded to its mild steel backing.

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Copper Paste

(*Concluded from Page* 83)

cams, or electrical control.

Generally speaking, while there are a number of ways of using copper paste for brazing, probably the three most striking from a saving standpoint are: Use of paste in conjunction with assembly operation at the assembly presses. Many users maintain at their presses constant level baths of paste and dip one or the other of the parts to be assembled into this bath prior to the press operation.

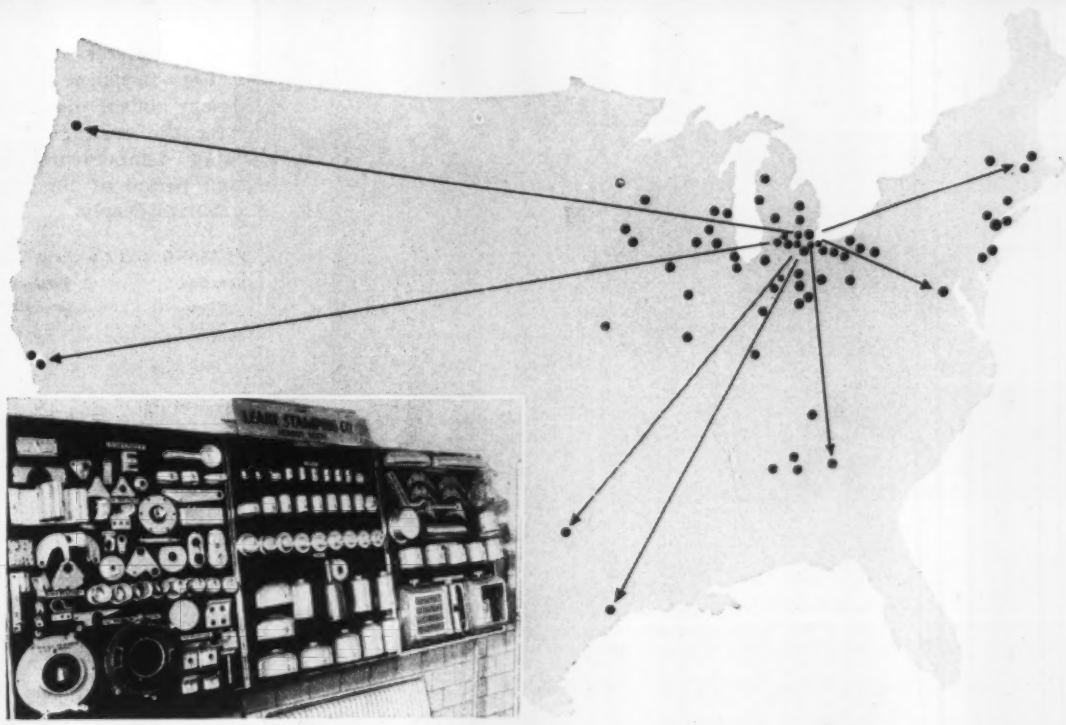
Acts as Press Fit Lubricant—The paste furnishes a lubricant for the press fit and at the same time, deposits at the junction of the parts the copper for the subsequent brazing operation. Second method of using the paste is by utilization of hand guns or pneumatic units. In many instances, where, for instance, rings were formerly used, it is unnecessary to put more than one or two dots at the part assembly junction. The copper, when processed in the furnace, on melting, runs around and supplies the circular member with the necessary copper, and it is unnecessary to completely surround the part as with rings. The third method is by the incorporation of a small amount of very finely divided iron, which with the copper produces a cementing material and is used in many cases where loose fits for expansion purposes are required, where unsatisfactory fits are found in the assemblies from stamping, and where large fillets are required, or where drops of copper running into the lowest point of the part are objectionable. These iron containing copper pastes are available from Metals Refining Co., Hammond, Ind.

Performs 22 Operations

EMPHASIS being placed on cost-cutting machine tools is shown in a special high production drum type machine performing 22 operations on a water pump body. A development of Barnes Drill Co., Rockford, Ill., the machine uses two opposed hydraulic units with special heads and a 17-station 27-inch indexing drum. One head is arranged with 25 spindles, the other with 5 spindles.

Operations consist of drilling, reaming, facing, boring, chamfering and hollow milling. In this process 12 holes and four surfaces are machined. With such a combination of operations, handling of the processed pieces is held to a minimum. Machine is said to perform the operations previously done on three special machines.

METAL STAMPINGS



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Don't let distance prevent you from submitting your metal stamping problems to the LEAKE organization. For almost every day transport carriers are delivering stamped parts from our modern plant in Monroe to customers in all sections of the country. The illustrated map above shows the location of customers, near and far, that call upon us for *unusual* metal stampings.

How do we do it? Frankly, the LEAKE staff has the reputation of being "tops" in engineering design. The resourcefulness of our engineers; modern, versatile machines and production equipment will, in most instances, "overcome" the cost of transportation . . . makes LEAKE metal stampings available almost everywhere.

Size, quantity, gauge and assembly are no problem. Press equipment includes batteries of small, medium, and large high-speed inclinables to huge triple-action hydraulics. Supplementary services include Brazing and Annealing, Carburizing and Hardening, Cleaning, Testing, Prime Coating and all types of Welding. In fact, the LEAKE organization and facilities together, form a "complete package" service that can be of most help to you.

LEAKE STAMPED METAL PARTS AND ASSEMBLIES GIVE YOU:

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Uniformity
Light Weight
Dimensional Accuracy
Good Appearance
..all with the satisfaction of Prompt Delivery

Send us a blue print or drawing of your part. We'll be frank in telling you if stampings offer no advantage over your present method of production—but if they do, we would like to show how we can help you.

★ ★ ★

Remember too, LEAKE offers engineering services and a complete die shop for the building of dies.

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COMPLETE PRESSROOM—MACHINE SHOP
HEAT TREAT—BRAZING—WELDING
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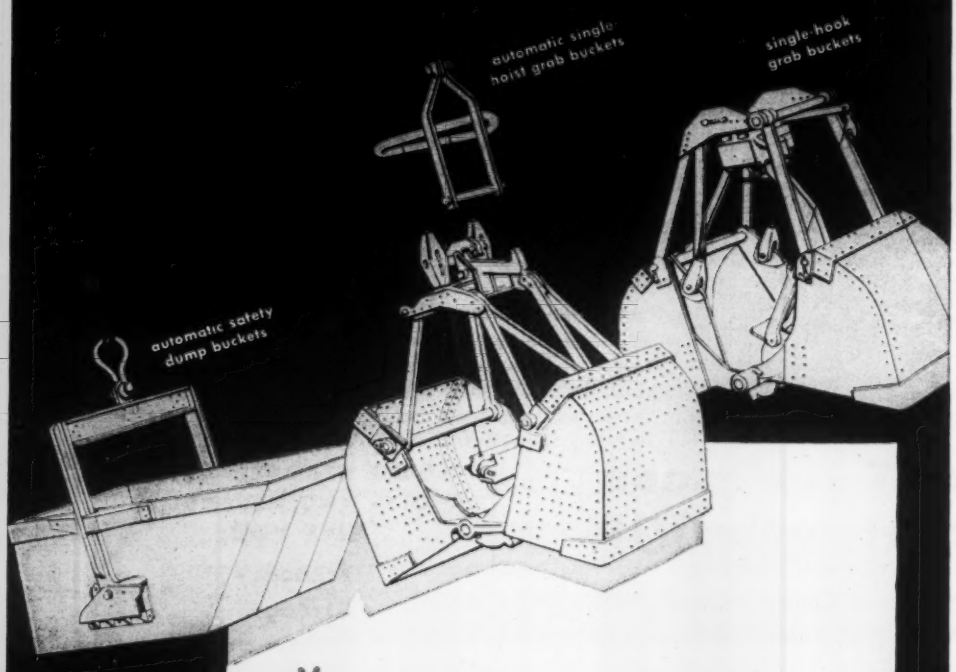
dependable*

is a word to describe

BROSIUS BUCKETS



*Dependable means trustworthy or reliable, all of which aptly describes Brosius Buckets, and here's why: Brosius Buckets are sturdily built of heavy steel forgings, castings and plates and all parts are oversized for extra wear. Design has been purified to the point of maximum practicality and simplicity of operation. Many Brosius Buckets have been in operation for more than thirty years and they aren't ready for replacement yet. If you want a bucket you can depend on to suit your purpose and last your lifetime, write to Brosius for details and prices.

Edgar E. BROSIUS Company Inc.

Nodular Iron's Record

(*Concluded from Page* 89)

mented with the annealing cycle and find the cycle shown below to be convenient and adequate. Castings are packed in heat-resistant alloy annealing boxes which are stacked two-high in pyrometer-controlled, oil-fired annealing furnaces. Packing is not necessary unless distortion is a factor, for the castings are not at an elevated temperature for a long enough period of time to oxidize or decarburize deeply.

ANNEALING CYCLE FOR DUCTILE IRON

Operation	Temperature	Hours
Heat to	1600° F	in 6
Hold at	1600	for 8
Furnace cool to	1300	in 8
Box cool		2
Shake out and cool		

"It will be noted that the annealing cycle is completed within 24 hours in the furnace as compared to a normal 30 hours for ordinary malleable iron. This is a big advantage in production, for castings which are poured today may be shipped the day after tomorrow. In emergencies, the heat treatment may be considerably shortened by heating the castings unpacked in open furnaces.

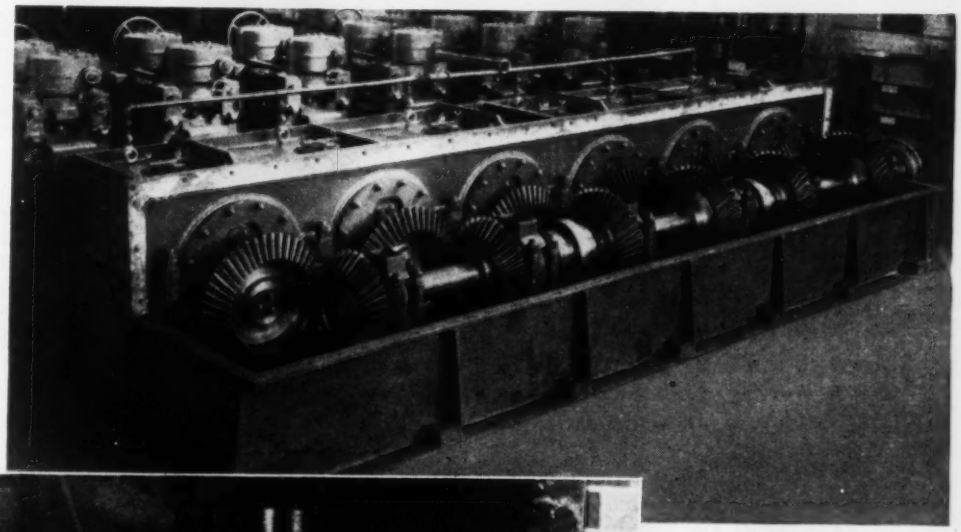
"We believe in ductile iron. It has filled our need for a strong, tough, ductile material. We have made hundreds of test castings for our customers, and enough of these castings have gone into production to prove that ductile iron can fill an important place in industry and that it can be produced with consistent high quality in light-sectioned castings."

YOUNGSTOWN FOUNDRY & MACHINE CO.—This company has already made a 12-ton slag pot for a blast furnace. This pot has been in continuous service for 8 months and shows no signs of cracking or warpage which are prevalent in other types of metal. These pots, however, will last from one to two years.

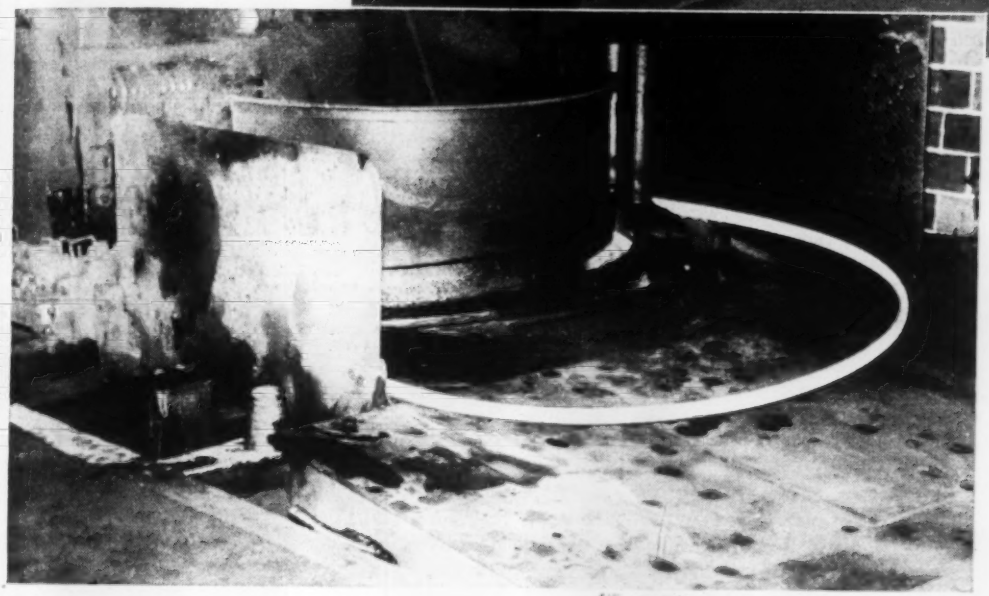
According to B. G. Parker, the company's president, Youngstown has also replaced some 10-inch mill roll housings that were formerly made of cast steel. They have also furnished numerous other castings for steel mills. Also they are making hydraulic cylinders for presses weighing up to 10,000 pounds each. No history is, of course, available on these cylinders.

Mr. Parker points out that his company is not as yet ready to give the most important information regarding the life of the castings furnished with this new process in competition with previously used materials. This will, of course, take some time.

10" Continuous rod mill
Combination drive



Double Oval Repeater



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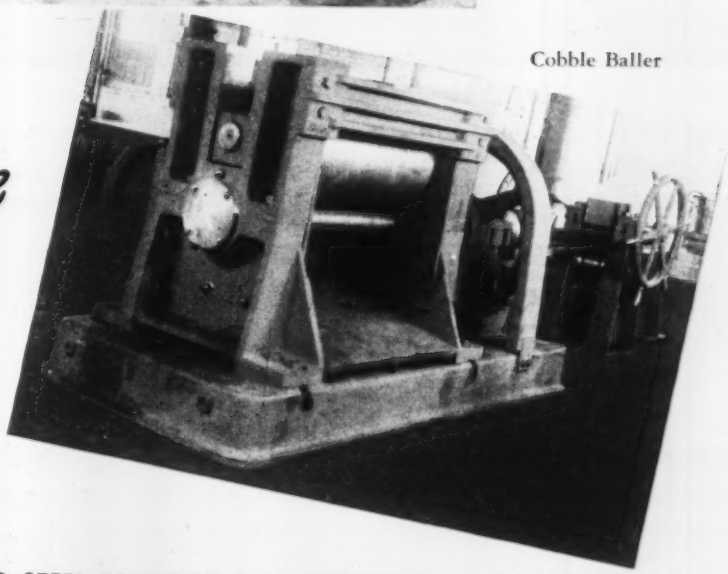
Almost 50 years of it devoted to research, design and advanced engineering contribute to the technical know-how necessary to provide you with maximum economies in the construction and operation of steel mill equipment.

Cobble Baller



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Cokemakers Face Gas Purification Program

BY H. A. COLLMAR
Research Department
Koppers Co. Inc.
Pittsburgh

Mounting sulphur content in coking coals soon may require installation of equipment at ovens for removal of hydrogen sulphide to render by-product gas suitable for use in steel plant reheating furnaces. One method now in commercial use removes and recovers both hydrogen sulphide and hydrogen cyanide

DEPLETION of good coking coals of relatively low-sulphur content has brought the steel industry face to face with the use of coals of ever-increasing percentages of sulphur. This means that when reheating semi-finished material such as billets and slabs to rolling temperature with these high-sulphur bearing gases, the steel becomes contaminated with sulphur and something akin to smallpox breaks out in the inspection department.

At present much of the coke oven gas in this country contains so much hydrogen sulphide and other sulphur compounds as to render the gas unsuitable for many purposes and indications are that it will become manditory in the future to install equipment to remove these troublesome compounds.

The Koppers' vacuum actification sulphur recovery process of gas purification, now in commercial use, is one method developed to remove and recover hydrogen sulphide from coke oven gas. The process, incidentally, removes and recovers hydrogen cyanide, which is another undesirable constituent in such gases. The recovered hydrogen sulphide, after separation of the hydrogen cyanide, is suitable either for the production of elemental sulphur or for the manufacture of sulphuric acid. The amount of sulphuric acid that can be manufactured from the hydrogen sulphide recovered from the coke oven gas depends on the sulphur content of the coal and, with higher sulphur coals now coming into use, may be enough to satisfy the combined acid requirements of the coke plant and the steel pickling units.

How Process Works — The coke oven gas is scrubbed with a solution of sodium carbonate which absorbs the hydrogen sulphide and hydrogen cyanide from the gas. After absorbing these constituents, the solution is revivified to expel the dissolved hydrogen sulphide and hydrogen cyanide in the actifier which is a steam stripping tower that operates under vacuum. Equipment for this process is ordinarily designed to remove from 90 to 95 per cent of the hydrogen sulphide from the gas, depending upon the requirements of the particular steel plant.

The gas scrubber in which the hydrogen sulphide is absorbed from the coke oven gas is usually designed as a tower packed with wooden hurdles. This packing consists of a number of thin wooden boards held together in frames so that the surfaces are vertical. Such packing has been found to operate with little stoppage difficulty and is a design that can be cleaned easily in case of any such trouble. The total height of the wooden hurdle packing depends upon the efficiency of hydrogen sulphide re-

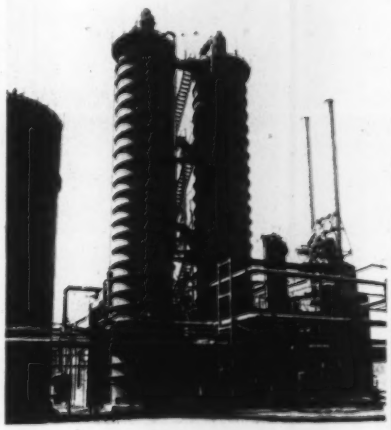

Fig. 2 (above) — Actifiers and auxiliaries at Kearney plant

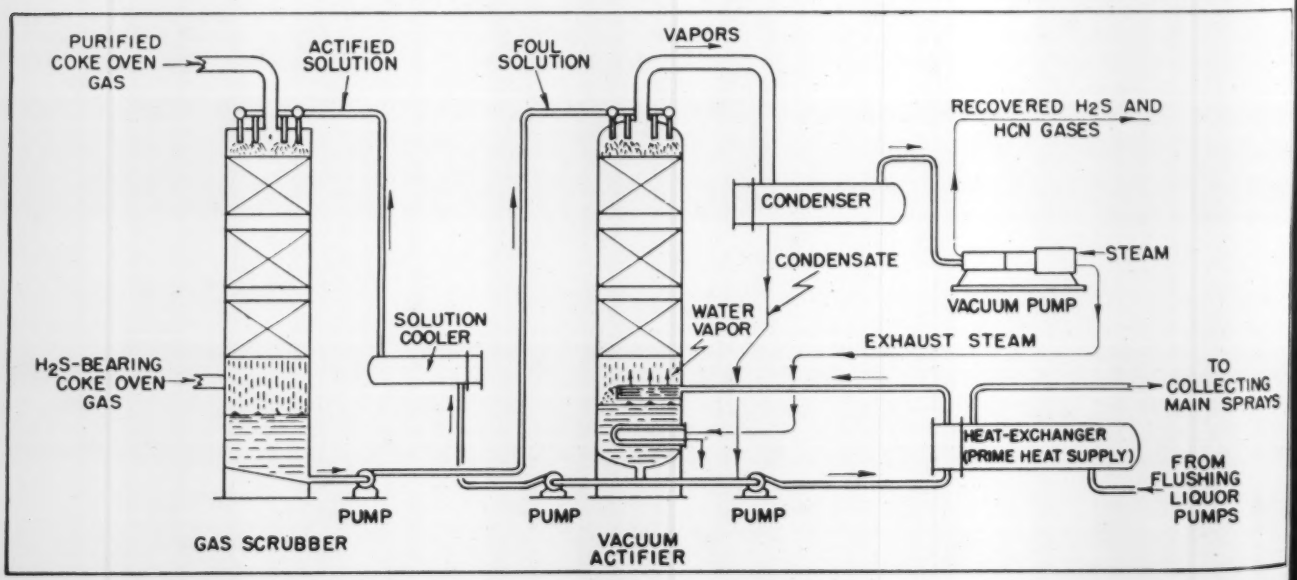

Fig. 1 (below)—Flow diagram of Koppers vacuum actification sulphur recovery process

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covery that is required. The sodium carbonate solution that is used to scrub the hydrogen sulphide from the gas is distributed over the top surface of these hurdles with a carefully designed spray system.

Subjected to Tower Treatment — The actifier in which the hydrogen sulphide bearing soda solution is revivified is either a hurdle tower similar to the absorber or a bubble plate tower that is braced to withstand vacuum. A boiling section at the base of the actifier is provided to generate the water vapor which passes upward through the tower to revivify the solution. The most economical manner of operation is to use waste heat recovered from another part of the coke plant to generate the required amount of water vapors in the boiling section. To do so, solution from the boiling section is recirculated through a heat exchanger to get heat either from hot gases leaving the coke ovens or hot flushing liquor from the coke-oven collecting mains. When the recirculated soda solution is heated in the heat exchanger and gets back into the boiling section, it is above its boiling point under the vacuum there existing and the heat obtained from the hot coke oven gas or the hot flushing liquor causes an equivalent amount of boiling.

Temperatures of these two coke plant materials are sufficiently high and their heat contents are sufficiently great to provide practically all of the heat required by the vacuum actification process. If such heat exchange is not used, it is necessary to provide a tube nest in the boiling section of the actifier so that steam from the boiler house, preferably low-pressure steam, can be used to do the heating.

Condensate Returned To System— Vapors that leave the top of the actifier need to be treated to recover the hydrogen sulphide and hydrogen cyanide that they contain. These vapors pass first through a preliminary cooler to condense out the bulk of the water vapor. The condensation of water vapor reduces the volume of these vapors so tremendously that the second cooler is much smaller in size. All of the water that condenses from the vapors is returned to the soda solution that is used to scrub the gas. The vapors leaving the second cooler then pass through the vacuum pumps that are operated to maintain the proper vacuum on the actifier.

The vapors discharged from the vacuum pump consist of a mixture of the recovered hydrogen sulphide, hydrogen cyanide and a small amount of carbon dioxide. After cooling, this vapor mixture is treated to recover

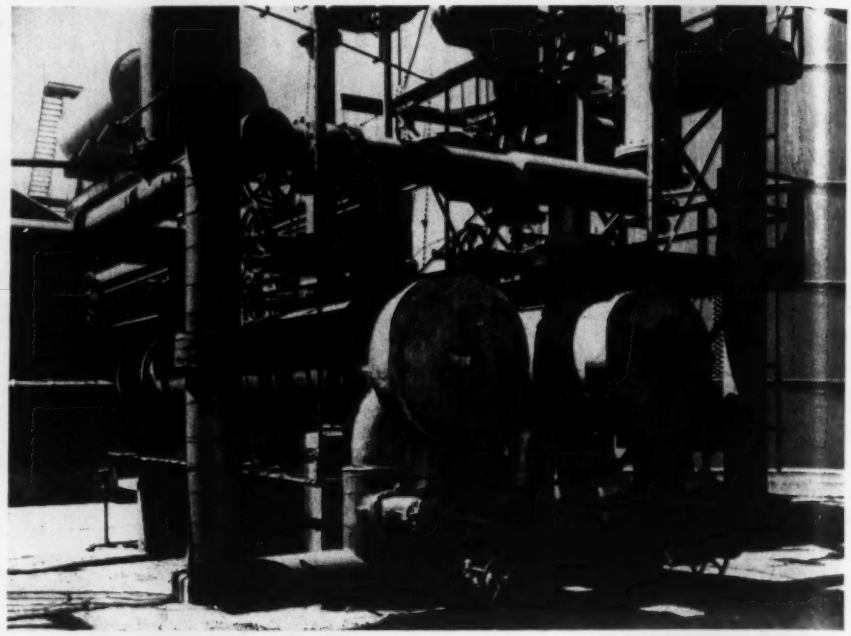

Fig. 3—Solution heat exchangers

the desired products. The hydrogen cyanide can advantageously be recovered in the form of sodium cyanide solution or as anhydrous hydrogen cyanide, which are the products made at the two installations that are now in operation. If desired, however, the hydrogen cyanide can be recovered in the form of other commercial products such as ammonium thiocyanate or sodium ferrocyanide. The hydrogen sulphide can then be used without further purification in a sulphuric acid plant instead of sulphur, which is the practice of the plants now in operation. Instead of sulphuric acid, elemental sulphur can be produced, if desired, from the hydrogen sulphide by passing it through a Claus kiln. Sulphur is a material which can be stored and shipped more easily than sulphuric acid.

Cost of Steam Varies—The operating cost of the process when steam is used in the actifier to generate water vapor to revivify the solution, is largely the cost of this steam. When the heat required by this process is obtained from waste heat from other parts of the coke plant, this steam cost largely disappears and the remaining costs are chiefly for the power to drive the pumps and the cooling water. Unless such heat recovery is used, it may be found necessary at some coke plants to enlarge their boiler house in order to produce the steam that would be required by this process.

The first installation of this process was made in 1941 and is now being enlarged. Another unit was placed in operation during 1948 in which equipment for heat recovery from the flushing liquor was incorporated to prevent the necessity of enlarging the boiler house. A third installation is under construction at the present time. The process is also used in the petroleum industry to purify refinery gases.

Mine Roof Pinned Up

MINERS working anywhere in three coal mines and seven ore mines of Tennessee Coal, Iron & Railroad Co., Birmingham, Ala., no longer have to move large machines and haulage cars in narrow areas between timber posts erected to support the roof. By installing pinned-up mine roof supports, the mine roof is literally pinned to solid rock above the working areas.

As soon as miners have opened a space for working, holes are drilled through the overhead coal or ore and soft slate or shale to hard rock. In the holes a slotted bolt of strong steel is wedged. The end projecting below roof level is threaded and on it a large square steel plate is held by a steel nut. The system is said to be as effective in holding up the roof as an upright timber.

To date, it is reported there have been no accidents from fall of roof in either coal or ore mines directly caused by the new method of roof support. With the frequency of accidents in TCI ore mines at the lowest in the company's history, the quality of product is greatly improved. Other benefits reported have been a decline to almost zero in the slate picked from mine-run ore and a reduction of acid content of conditioned ore by about 2 per cent.

Rivet-grade steel is used for the bolts, this providing a minimum ul-

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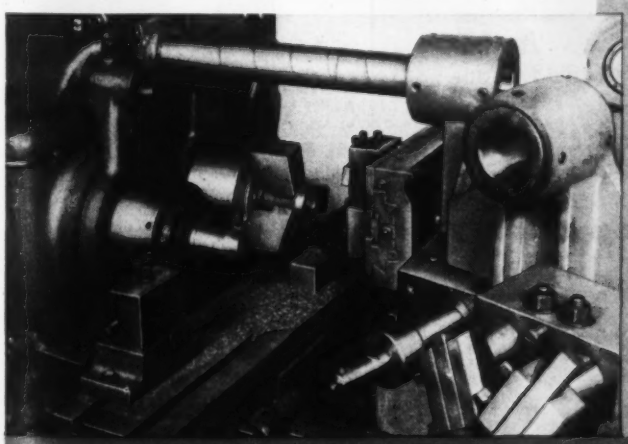
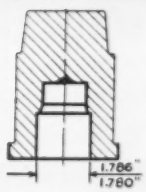
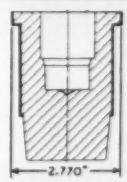


For Example: THESE ANNEALED CAST IRON THIMBLES

ARE MACHINED WITH MAXIMUM PRODUCTIVITY AND PROFIT ON THE P&J 5-D2-9 (2 SPINDLE) AUTOMATIC . . . ONE FINISHED PIECE PER TURRET CYCLE. HEAVY LINES IN DRAWINGS INDICATE SURFACES MACHINED. OPERATIONS DETAILS, TURRET FACE BY TURRET FACE, SHOW HOW CUTS ARE COMBINED TO SAVE TIME AND EARN PROFITS.

	 1.786" 1.780" **First Operation on REAR SPINDLE**	 2.770" **Second Operation on FRONT SPINDLE**
1st T.F.	Drill Hole	Rough Turn Taper
2nd T.F.	Rough Bore and Face 2 Dias. — Machine Bevel. — Rough Face Flange. — Turn Flange O.D.	Turn Flange Dia. Turn Body Dia. — Face Shoulder
3rd T.F.	Bore 2 Dias.	Finish Turn Body Dia. — Face Shoulder. Finish Flange O.D.
4th T.F.	Finish Face Shoulder	Finish Face Flange. — Face Bottom of Bores with Slide Tool
5th T.F.	Ream 2 Dias.	Size Turn Body Dia.

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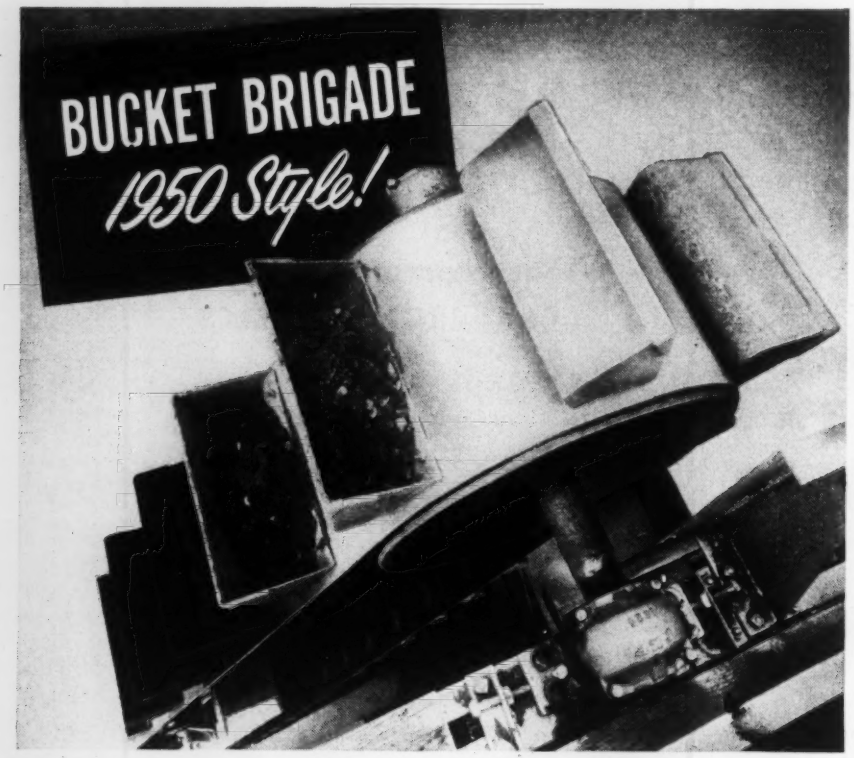

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timate strength of 56,000 psi; a 1-inch bolt supports 33,600 pounds of roof on its threaded end and 44,000 pounds on its anchored end. The bolts used are of various lengths, depending upon use. Trend in coal mines is to use bolts long enough to penetrate the drawslate and anchor in the sandstone roof. Ore mine practice is to use bolts long enough to anchor the roof in an arch formation, the entire arch anchored to solid rock above it. In some cases steel channels are used instead of plates to hold up larger roof areas where clearance is provided.

Brazing Increases Production

USE of notched coil, stress-relieved silver alloy brazing and soldering rings in the manufacture of gas strainers for household refrigerators has stepped up hourly production by about 800 per cent and reduced operating costs some 75 per cent for one company. In the application the rings are detached from the coil easily without breaking or distorting, due to the notched feature. They fit snugly over the outside diameter and automatically lap themselves. The manufacturer of the alloy rings, Lucas-Milhaup Engineering Co., Cudahy, Wis., states that tolerances of plus or minus 0.001-inch in actual ring diameter or developed wire length are maintained at all times under all conditions.

Material costs of the 45 per cent silver content alloy are reduced about 25 per cent since only measured amounts are used. The notched coil feature reduces assembly time by approximately 10 per cent because the operator does not have to untangle rings.

Latest in Pickling Equipment

SHALLOW immersion of the delivery end of a new 60-inch pickling line, instead of the deep immersion normally used, will feature a new installation at the East Chicago, Ind. plant of Inland Steel Co. This development is made possible through use of twin rolls in the pickling tank, combined with an Amplidyne control supplied by General Electric Co., Schenectady, N. Y. Twin rolls will be in a fixed position to maintain a constant position and delivery tension will be held through use of the Amplidyne control. This tension, once preselected by the operator, is said to be maintained automatically for all strip speed throughout the operating range.

Additional GE equipment to be installed includes an adjustable voltage, direct current control for process motors and pinch-roll motors, as well as

for side trimmers and up coiler. Constant voltage, direct current control will be used for the 40-foot entry conveyor, scrap chopper, delivery conveyor and rewind and motors. The main process line, consisting of a group of assembled alternating current motors designed for steel mill operation, will be controlled by a Milltrol, operating from 440-v ac plant supply lines.

It is said that the main motor generator set will consist of a six-unit combination including a 1250 hp 6600 v 7750 rpm synchronous driving motor, two entry end generators, two delivery end generators and one general-purpose excitor generator. It is stated that this will allow complete individual control of each of the main line sections without interaction between sections. All sections will be held in co-ordination to provide desired strip tension throughout the required strip speed ranges by means of a completely integrated master control system.

Tools Save Production Time

PROBLEM of producing both a back-spot face and a chamfer on the inner boss of a heavy steel casting, as well as a corresponding chamfer at the outer entrance of the same hole, was staring Allis Chalmers Co., Milwaukee, in the face. By using special tools made by Nobur Mfg. Co., Burbank, Calif., the job is being performed at a considerable saving in production time.

Tools used in this unusual application act as a pilot for a removable back-spot facing cutter of conventional design and also incorporate a retractable blade made by the company for the chamfering operation. It is said that the two operations are accomplished rapidly and in succession without stopping the spindle or changing tools, inasmuch as the chamfering cutter is projected or retracted by movement of the knurled sleeve during the spindle operation. Adjustable stop rings provide for positioning of the tool.

Install Expansion Joints

APPRECIABLE expansion or contraction of large heated metal vessels, boilers, tanks, ovens and furnaces, often brings about cracking and buckling of insulation on large surfaces. Industrial Mineral Wool Institute, New York, states that on equipment operating above 600° F, horizontal expansion joints should be provided at 12 to 16-foot intervals. These joints may consist of 1½ to 2-inch wide furrows of loose mineral wool, covered by protecting flaps of galvanized hardware cloth between adjacent blanket areas.

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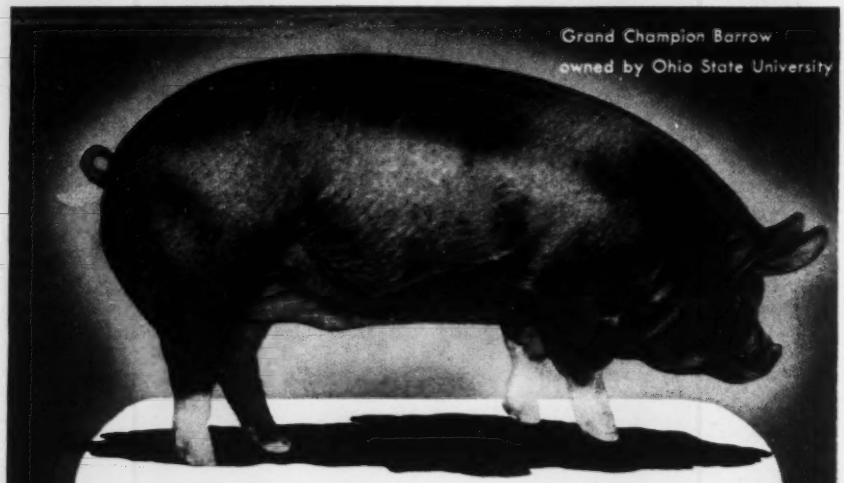

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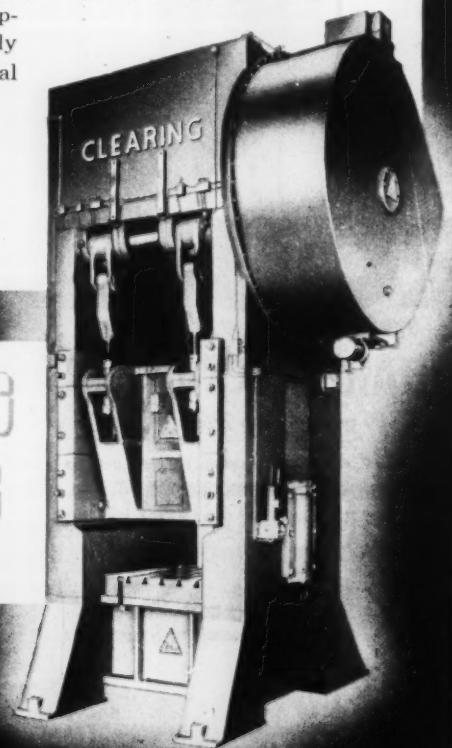

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CALENDAR OF MEETINGS

JULY

July 28, Malleable Founders' Society: Western sectional meeting, Drake Hotel, Chicago. Society headquarters are in the Union Commerce Bldg., Cleveland.

AUGUST

Aug. 7-19, First U. S.-International Trade Fair: Coliseum, International Amphitheater and Navy Pier, Chicago. Fair headquarters are in Congress Hotel, Chicago.

Aug. 14-16, Society of Automotive Engineers: West coast meeting, Biltmore Hotel, Los Angeles. Society headquarters: 29 W. 39th St., New York 18.

Aug. 16-18, Third Western Packaging and Materials Handling Exposition: Civic Auditorium, San Francisco. Additional information from Clapp & Poliak Inc., 341 Madison Ave., New York 17.

SEPTEMBER

Sept. 5-9, American Chemical Society: National Chemical Exposition, Chicago Coliseum. Sponsored by Chicago Section, ACS, 86 E. Randolph St., Chicago 1.

Sept. 11, Society of Automotive Engineers: Tractor meeting, Hotel Schroeder, Milwaukee. Society headquarters are at 29 W. 39th St., New York.

Sept. 11, Society of Automotive Engineers: Aeronautical meeting and aircraft engineering display, in Los Angeles. Society headquarters are at 29 W. 39th St., New York.

Sept. 13-15, Porcelain Enamel Institute: Twelfth Annual Forum, University of Illinois, Urbana, Ill. Institute is located at 1010 Vermont Ave., N.W., Washington 5, D. C.

Sept. 13-16, National Association of Foremen: 27th annual convention, Statler Hotel, Buffalo, N. Y. Association headquarters: 321 W. First St., Dayton 2, O.

Sept. 18-22, Instrument Society of America: Instrument conference and exhibit, Memorial Auditorium, Buffalo, N. Y. Society headquarters are at 921 Ridge Ave., Pittsburgh 12.

Sept. 19-21, American Society of Mechanical Engineers: Fall meeting, Hotel Sheraton, Worcester, Mass. Society headquarters at 29 W. 39th St., New York 18.

Sept. 23-26, Packaging Machinery Manufacturers Institute: 18th annual meeting, The Homestead, Hot Springs, Va. 342 Madison Ave., New York 17, is address of institute.

Sept. 25-27, National Electronics Conference: 6th annual exhibition, Edgewater Beach Hotel, Chicago. Conference headquarters, Room 212, 920 S. Michigan Ave., Chicago 5.

Sept. 26-29, Association of Iron & Steel Engineers: Convention and exposition, Public Auditorium, Cleveland. Association headquarters are at 1010 Empire Bldg., Pittsburgh 22.

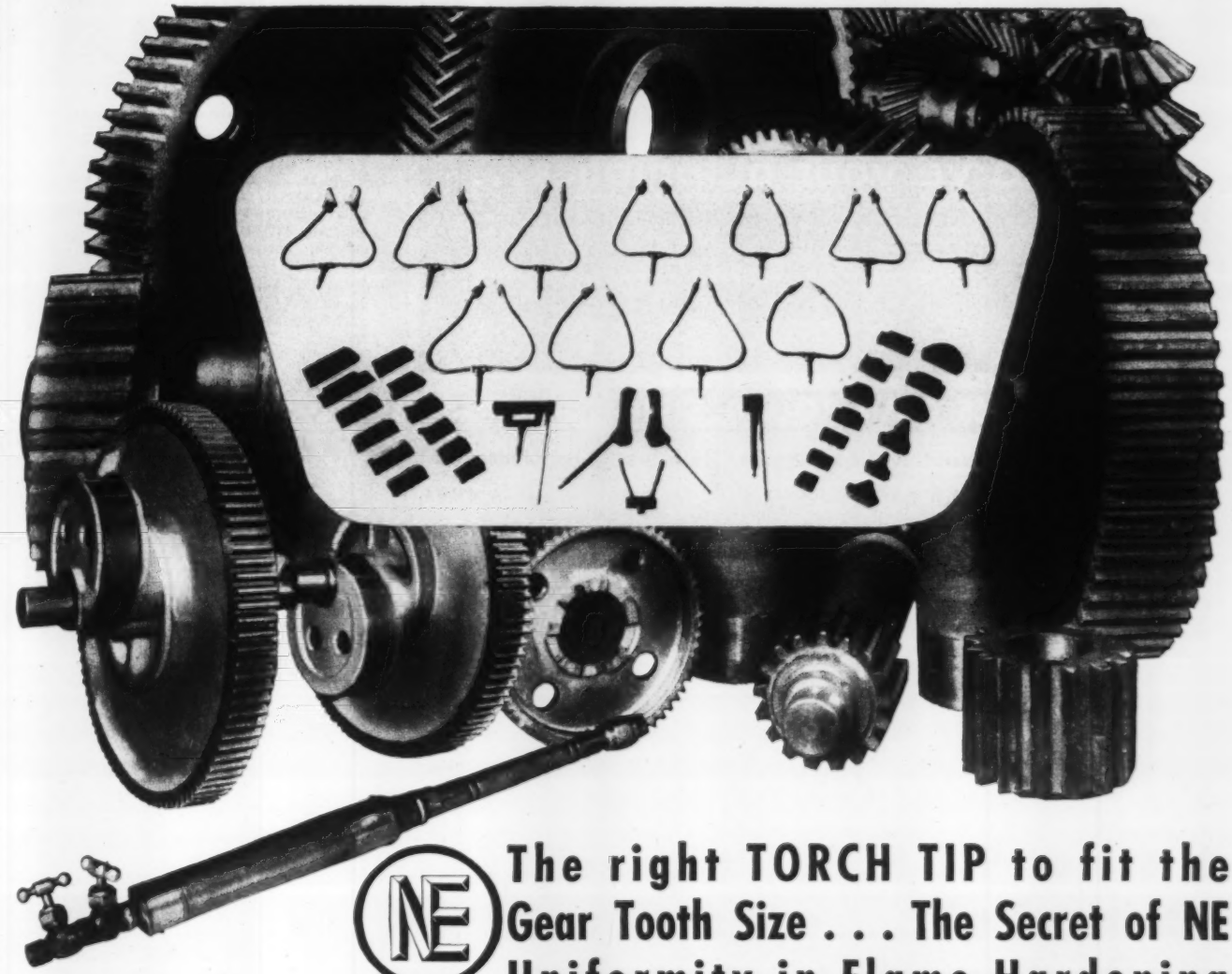
OCTOBER

Oct. 2-6, Gas Appliance Manufacturers Association: Biennial exposition, Convention Hall, Atlantic City, N. J. Association headquarters: 60 E. 42nd St., New York 17.

Oct. 5-6, American Foundrymen's Society: Regional conference Plaza Hotel, San Antonio, Tex. Sponsored by Texas chapter, AFS, with headquarters at 5210 Canal, Houston.

Oct. 5-6, Porcelain Enamel Institute: 4th annual sales and management conference, Hotel Cleveland, Cleveland. Institute headquarters: 1010 Vermont Ave. N.W., Washington 5, D. C.

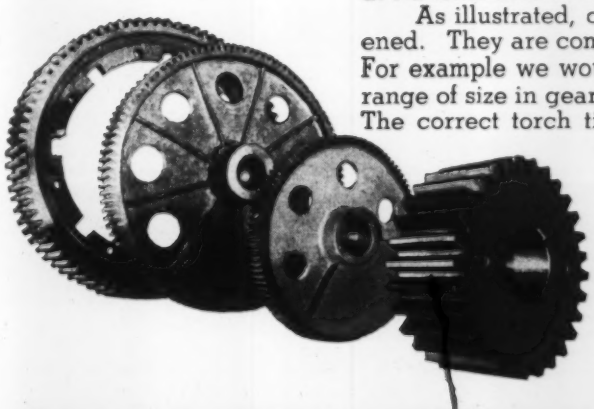
Oct. 9-11, National Academy of Sciences: Autumn meeting, General Electric research laboratory, Schenectady, N. Y. Address of



The right TORCH TIP to fit the Gear Tooth Size . . . The Secret of NE Uniformity in Flame Hardening

In the Flame Hardening heat treatment of Neloy or Neloy Moly Alloy Steel gears for the machines of industry, the right torch tip to fit the tooth size is of prime importance. Penetration of hardness to the proper depth for a given size of gear tooth, and core toughness can be obtained uniformly in no other way. Directing the flame to the teeth from a torch tip that fits the tooth size is assured at National-Erie . . . It is a standard "Must" that is never overlooked.

As illustrated, our torch tips are developed to fit the tooth size to be hardened. They are comparable in sizes to the standard range gear cutters or hobs. For example we would use the same tip for a 1 D.P. and 3" C.P. tooth. Each range of size in gear teeth requires a torch tip that fits the tooth to be hardened. The correct torch tip plus National-Erie skill in flame hardening assures the combination of a high surface hardness comparable to the carburizing or case hardened treatment, with a core toughness of a fully quenched medium carbon alloy steel.



A range of torch tips has also been developed by our engineers with the same care, for the flame hardening of track wheel treads and rope sheave grooves. They also are illustrated.

Write for Bulletin No. 9 giving full description of the products of these torch tips.

NATIONAL ERIE CORPORATION

ERIE, PENNSYLVANIA • U. S. A.

why starve your automatics...

FOLLANSBEE COLD ROLLED STRIP feeds right from the coil into your automatic machines. There's real efficiency and time-saving economy in the continuous supply of presses, roll-formers, and other automatics. These high-speed machines need never starve for material because you can feed Follansbee Cold Rolled Strip directly from the coil.

making gadgets for gourmets?

FOLLANSBEE COLD ROLLED STRIP is manufactured in a range of tempers, and with the proper finish, for making turners, mixers, beaters, and a myriad other profitable specialties. Custom-made Follansbee Cold Rolled Strip, in continuous coils, is furnished to your specifications. You should be taking advantage of the machining quality of Follansbee Cold Rolled Strip and Follansbee Polished Blue Strip. Just call the Follansbee Steel Representative nearest you.

FOLLANSBEE STEEL CORPORATION
GENERAL OFFICES, PITTSBURGH 30, PA.

CALENDAR OF MEETINGS

NAS headquarters is 2101 Constitution Ave., Washington 7, D. C.

Oct. 10-12, Society of Industrial Packaging and Materials Handling Engineers: 5th annual industrial packaging and materials handling exposition, Convention Hall, Philadelphia. Society is located at 20 W. Jackson Blvd., Chicago 4.

Oct. 11-13, American Society of Civil Engineers: Fall meeting, Chicago. Headquarters of society are at 33 W. 39th St., New York 18.

Oct. 12-13, Foundry Equipment Manufacturers' Association: Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are in Engineers Bldg., Cleveland 14.

Oct. 12-13, Gray Iron Founders' Society: 22nd annual meeting, Netherlands Plaza Hotel, Cincinnati, O. 210 National City-E. Sixth Bldg., Cleveland 14, is location of society.

Oct. 15-17, Conveyor Equipment Manufacturers Association: Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are at 1129 Vermont Ave. N.W., Washington 5, D. C.

Oct. 16-19, Society of Automotive Engineers: Transportation meeting, Hotel Statler, New York. Society headquarters are at 29 W. 39th St., New York 18.

Oct. 16-20, National Safety Council: 38th National Safety Congress and Exposition, Chicago. Meeting in Stevens, Congress, Morrison hotels. Council is located at 425 N. Michigan Ave., Chicago 11.

Oct. 18-19, Sixth annual national conference on industrial hydraulics: Sherman Hotel, Chicago. Sponsored by Armour Research Foundation and seven Chicago technical societies. Conference director: Otto J. Maha, Hannifin Corp., 621 S. Kolmar, Chicago 24.

Oct. 18-20, Society of the Plastics Industry: Annual national conference, New Ocean House, Swampscott, Mass. Society headquarters: 295 Madison Ave., New York 17.

Oct. 18-22, Wire Association: Annual convention, Lord Baltimore Hotel, Baltimore, Md. Association is located at 300 Main St., Stamford, Conn.

Oct. 23-26, American Institute of Steel Construction: Meeting and photographic exhibit, Shamrock Hotel, Houston, Tex. 101 Park Ave., New York 17, is address of institute.

Oct. 23-27, American Society for Metals: 32nd annual National Metal Congress and Exposition, International Amphitheatre, Chicago. Also annual meeting of society, which is located at 7301 Euclid Ave., Cleveland 3.

Oct. 23-27, American Welding Society: Annual meeting, Chicago (held in connection with National Metal Congress). Society headquarters at 33 W. 39th St., New York 18.

Oct. 23-27, American Institute of Mining and Metallurgical Engineers: Metals Branch, fall meeting, Chicago (held in connection with National Metal Congress). AIME located at 29 W. 39th St., New York 18.

Oct. 23-27, Society for Non-Destructive Testing: Annual meeting, Chicago (held in connection with National Metal Congress). Society offices: Skokie, Ill.

Oct. 26-28, Audio Engineering Society: Technical sessions and Audio Fair, Hotel New Yorker, New York. Society Address: P. O. Box F, Oceanside, N. Y.

Oct. 29-31, American Gear Manufacturers Association: Semiannual meeting, Edgewater Beach Hotel, Chicago. Association is located at Empire Bldg., Pittsburgh 22.

Oct. 29-Nov. 1, National Tool and Die Manufacturers Association: Convention, Hotel Statler, Cleveland. Headquarters of association: 1412 Union Commerce Bldg., Cleveland 14.

Oct. 30-Nov. 1, National Lubricating Grease Institute: Meeting, Edgewater Beach Hotel, Chicago. National offices at 4638 Mill Creek Parkway, Kansas City 2.

You can make "OVERHEAD" Pay a Profit...

with Swift Trav-Lift Crane Service

Heavy loads need not mean heavy costs when you have "thru-the-air" handling. No congestion, no delays, no excessive costs *this* way!

THE P&H TRAV-LIFT gives you one-man handling of loads up to 15 tons. You lift and transport, lower and stack — anywhere in the entire area served by the crane. And *all* without rehandling!

The Trav-Lift is custom-built to your requirements from cost-saving standard designs. It has all the P&H Added Value features that mean more dependable, lasting service. It's a product of P&H — America's leading builder of overhead handling equipment.

P&H Trav-Lift Cranes are built in capacities up to 15 tons

Get the Trav-Lift Story. It means new economy and efficiency in your handling if your service needs do not warrant investment in a heavy-duty crane.

These added values

protect your investment

VARIABLE SPEED FULL MAGNETIC CONTROL provides 5 distinct steps for all motions: controlled from pendant push-button or from operator's cab.

SAFE — Only 110 volts at the push-button when floor-controlled. Start-stop main line contactor, disconnect switch, thermal overload protection, magnetic limit switch and powerful brakes assure maximum safety.

ALL-WELDED BRIDGE AND TROLLEY incorporates the most important factors in reliable service — rigidity, safety, accessibility.

LIFE-TIME CONSTRUCTION — Motors designed specifically for crane service — high starting torque, frequent reversal. Shaved gears, grease sealed antifriction bearings throughout.

COMPETENT ENGINEERING SERVICE—P&H materials handling engineers will gladly give you their years of experience in working out your particular problems. Write us.

Handle it "THRU-THE-AIR" at LOWER Cost

P&H TRAV-LIFT CRANES

4411 West National Avenue
Milwaukee 14, Wisconsin

HARNISCHFEGER CORPORATION

TORS • OVERHEAD CRANES • HOISTS • ARC WELDERS and ELECTRODES • SOIL STABILIZERS • CRAWLER and TRUCK CRANES • DIESEL ENGINES • CANE LOADERS • PRE-ASSEMBLED HOMES

KENNAMETAL
Developments for Reducing Cost of Manufacturing and Servicing Chilled Iron Rolls

ROUGHING and FINISHING TOOLS for Plunge Feed Lathes

STYLE RT

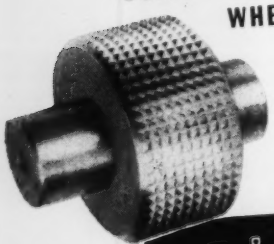
STYLE RRT

Style RRT (above) has replaceable solid Kennametal cylinders that can be turned on their axis to provide a multiplicity of cutting edges; Style RT (right) has a solid Kennametal blade that provides four successively available cutting edges. Standard widths, both tools—4", 6", 8", 10"

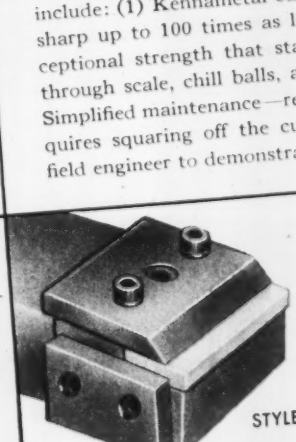
These rugged, durable Kennametal tools cut machining time in half, on chilled cast iron rolls. Style RRT slices through scale easier, permits faster speeds and huskier feeds, trues up a roll quickly. Style RT gives superior finish that requires little or no grinding. Exclusive features include: (1) Kennametal cutting edges that stay sharp up to 100 times as long as steel; (2) Exceptional strength that stands gaff of crashing through scale, chill balls, and burned spots; (3) Simplified maintenance—resharpening simply requires squaring off the cutting edges. Ask our field engineer to demonstrate.

The ground-in knurls of this solid Kennametal wheel keep their shape far longer than those on steel wheels—performance reports indicate as much as 100 times the service before regrinding is necessary. Made on order to customer's specifications.

SOLID KNURLING WHEEL



CLAMPED-IN BLADE TOOL for Longitudinal Feed Lathes



STYLE LRT

This tool employs the proved Kennametal mechanically-held principle. Its width is $2\frac{1}{2}$", and like the Style RT tool shown above its blade has four cutting edges that can be used before any sharpening is required. Then the cutting edges are squared off, and the blade can be advanced after each sharpening.

KENNAMETAL Inc.
LATROBE, PA.

MANUFACTURERS OF SUPERIOR CEMENTED CARBIDES AND CUTTING TOOLS THAT INCREASE PRODUCTIVITY

CALENDAR OF MEETINGS

NOVEMBER

Nov. 1-2, Porcelain Enamel Institute: 19th annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Institute headquarters, 1010 Vermont Ave. N.W., Washington 5, D. C.

Nov. 1-2, Pennsylvania Society of Training Directors: 4th annual conference, Community Building, Hershey, Pa. General chairman: T. G. Newton, Armstrong Cork Co., Lancaster, Pa.

Nov. 1-3, American Society of Body Engineers: 5th annual technical convention, Rackham Memorial Building, Detroit. Headquarters of society at 100 Farnsworth, Detroit 2.

Nov. 2-3, Society of Automotive Engineers: Diesel engine meeting, Hotel Knickerbocker, Chicago. Society headquarters are at 29 W. 39th St., New York 18.

Nov. 2-3, Third Annual Metals Casting Conference: Sponsored by Michiana and Central Indiana Chapters, American Foundrymen's Society. To be held at Purdue University, Lafayette, Ind.

Nov. 2-3, Eighth Annual Conference on X-ray and Electron Diffraction: To be held at Mellon Institute for Industrial Research, Pittsburgh 13.

Nov. 9-10, Society of Automotive Engineers: Fuels and lubricants meeting, the Mayo, Tulsa, Okla. Society headquarters are at 29 W. 39th St., New York 18.

Nov. 12-15, National Automatic Merchandising Association: Annual convention and exhibit, Palmer House, Chicago. Association offices: 7 S. Dearborn St., Chicago 3.

Nov. 27-Dec. 2, American Society of Mechanical Engineers: 19th National Exposition of Power and Mechanical Engineering and annual meeting, Grand Central Place, New York. Exposition headquarters: Grand Central Place, New York 17.

DECEMBER

Dec. 7-9, Electric Furnace Steel Committee, AIME: 8th annual meeting, William Penn Hotel, Pittsburgh. AIME headquarters: 29 W. 39th St., New York 18.

Loads 4 Yards per Minute

WEAR-resistant manganese steel bucket chains, sprockets, bucket edges and spiral feeder edges feature the wheel and crawler model heavy-duty bucket loaders made by N. P. Nelson Iron Works Inc., Clifton, N. J. Both machines are said to handle loose material up to 3 inches cube, either from stock piles or bank run sand pits. Rated load capacity is 3 to 4 cubic yards per minute and maximum weight is 150 pounds per cubic foot. Machines are equipped with hydraulic boom control and larger Twin-Disc clutches with double roller-chain transmission drive.

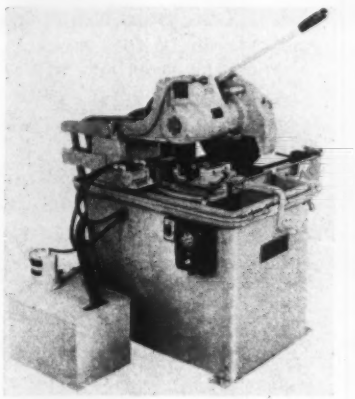
Advances Reviewed

ADVANCES made in various fields of manufacture are reviewed in the 1949 annual review of Allis-Chalmers Mfg. Co., Milwaukee, Wis. The profusely illustrated 40-page booklet contains much information on various fields of the company's manufacturing.

New Products and Equipment

Equipped for Wet Cutting

A wheel depth control arm operated from the operator's normal position adjusts the depth of cut on the Swing-Cut metal cutoff machine made by Stone Machinery Co. Inc., 549 Fayette St., Manlius N. Y. Machine is equipped for wet cutting



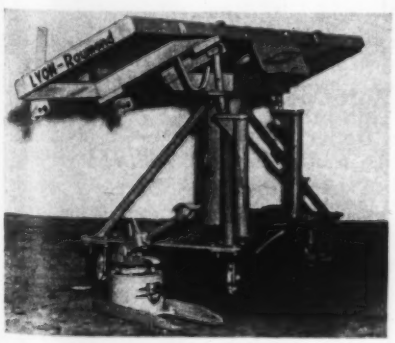
and has recirculating pump, tank, hose connections and removable splash guards.

Flow of cutting fluid is controlled by action of the cutting head. An adjustable work stop can be used for cutting of multiple pieces up to 24 inches in length. Machine can be equipped with an air activated self-centering vise, either hand or foot-controlled.

Check No. 1 on Reply Card for more Details

Feeding Tables Have Tilt Tops

Lyon-Raymond Corp., 9173 Madison St., Greene, N. Y., is offering hydraulic sheet feeding tables with a self-tilting top for use with inclined



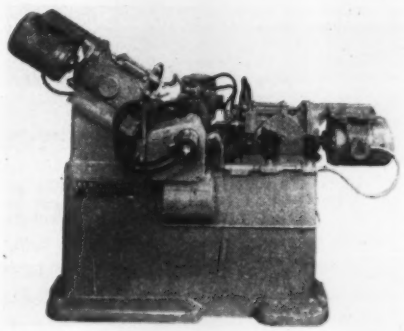
bed presses. Sheets are loaded on the table top when it is in a horizontal position. By manipulation of the pump and table supports, top is hydraulically tilted to the desired angle.

When proper degree of tilt has been fixed, table can be elevated or lowered as required to keep stock at correct height for feeding into the press. Adjustable stops are provided on one side of the table to keep entire pile of sheets even for accurate feeding. Tilting arrangement is available as an optional feature on 2000, 4000 and 6000 pound capacity tables made by the company.

Check No. 2 on Reply Card for more Details

Automatic Index Machines

Arranged for continuous or intermittent drilling, reaming, tapping, counterboring, chamfering and spotfacing operations, is the No. 2 automatic index machine, built by W. K. Millholland Machinery Co., 6402 Westfield Blvd., Indianapolis 5, Ind. Machine has three No. 2 Millholland automatic units of standard self-contained type of 1½ hp capacity and 2½ inch stroke. Two units are



mounted horizontally at right angles while the third unit is on an angle pointing down to the work.

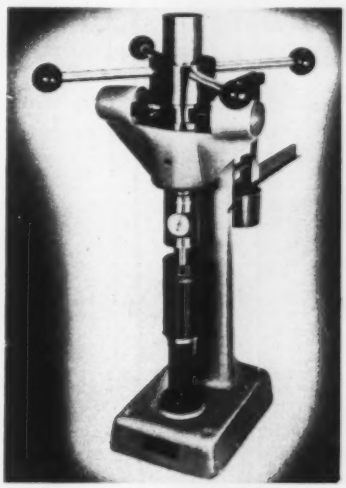
Machine will drill a series of 12 holes around the periphery of a flanged bushing and 24 holes in the flange end. An air-operated collet chuck mounted on an automatic indexing spindle holds the part. Unit for drilling 24 holes is equipped with a 4-spindle multiple head, while the other two units have single spindles. Fixture spindle indexes six divisions automatically and stops ready for loading. Production is reported at 150 to 320 pieces per hour. Machine is arranged for continuous or intermittent operation by pushbutton control.

Check No. 3 on Reply Card for more Details

Tests Foundry Sand

Sand press, developed by Harry W. Dietert Co., 9330 Roselawn Ave., Detroit 4, Mich., rams the foundry sand specimen being tested to a specific hardness by applying a selected squeezing load to the sample contained in the test mold. A green hardness tester forms an integral part of the ramming plunger, informing the operator of the hardness to which the sand under test is being rammed.

Each individual molding sand or core sand mixture is rammed to the

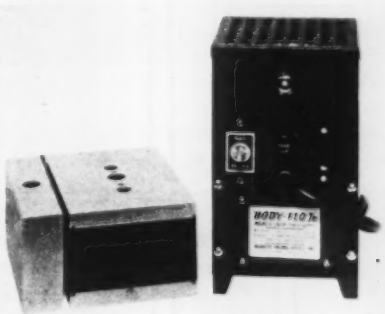


same degree of hardness for test purposes as it is rammed in the foundry. Following this procedure, sand is tested at the same green hardness as it is used in the foundry.

Check No. 4 on Reply Card for more Details

Small Magnetic Chuck

Featuring a 6-inch unbroken line of magnetism which permits grinding uniformly parallel sides and holding work as thin as 0.011-inch is the Body Flo Jr. electromagnetic chuck and power supply unit, a development of Magnetic Holding Devices Inc., 2034 E. 22nd St., Cleve-



land 15, O. Chuck measures 2 15/16 x 4 x 6 inches with companion steel parallel of same length. Copper sulphide rectifier has convection cooling, a Mag-Demag switch and operates on 110 v ac.

Chuck holds large or small work, horizontal, vertical or angular set-

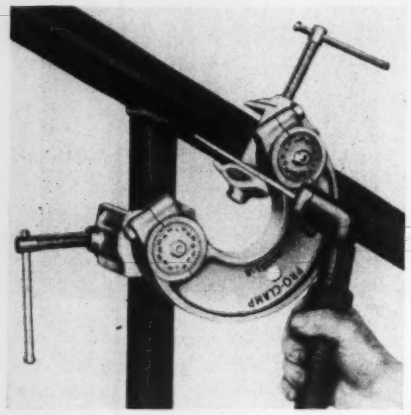
ups in small surface grinders. It magnetically holds itself to the worktable, or it may be bolted to the T-slots.

Check No. 5 on Reply Card for more Details

Protractor Equipped Clamp

Rapid and accurate positioning and holding of plates, rods, bars, angles, tubes, etc., at any angle or degree is provided by the model B Pro-Clamp, available from Bernard Welding Equipment Co., 741 E. 71st St., Chicago 19, Ill. Jaw capacity is 2½ inches.

One face of each of the two rotating clamps has a flat surface for



gripping plates or other flat surfaces; opposite face has a V-form for handling round or oval pieces. Pressure screws may be shifted from one side of these clamps to the other. Each clamp has a double 180 degree protractor scale as well as a locking device so that the exact angle desired can be easily set. Devices are of all steel construction, cadmium plated to resist weld spatter and retard rusting.

Check No. 6 on Reply Card for more Details

Silicone Insulated Welder

Silicone insulation is incorporated in the design of a portable alternating current welder in the 6WK20H series announced by General Electric Co., Schenectady 5, N. Y. As unit is unaffected by high temperatures and is water repellent, a high margin of safety and operating dependability is provided. Compact construction of the unit, 12 x 17 x 23 inches, permits utilization of underbench and balcony space not large enough for other units.

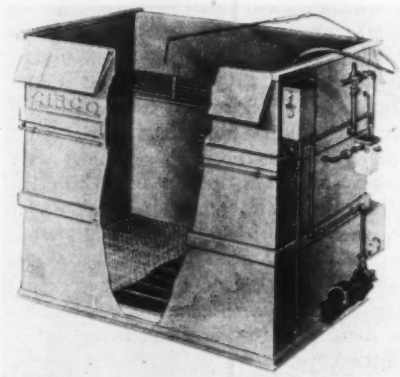
Current ranges from 30 to 250 amp and electrodes from $\frac{1}{16}$ to $\frac{3}{16}$-inch in diameter can be accommodated. Instant arc striking without manual adjustment is provided by "hot start" automatic control. Ampere range is covered by three overlapping current ranges which permit precise current control. Although the standard model contains a primary switch and is

designed for operation on 220 v, models are available for operation on 440 v with or without power factor capacitors.

Check No. 7 on Reply Card for more Details

For Volume Degreasing

Designed for heavy industrial use, the C-120 vapor-spray degreaser announced by Circo Products Co., 6531 Euclid Ave., Cleveland 3, O., has a vapor depth of 84 inches, inside length of 96 inches and width of



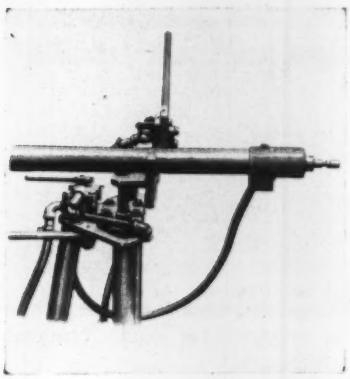
60 inches. It is available in either nickel clad, stainless clad or zinc-sprayed construction. The nonflammable, nonexplosive solvent is heated by steam, gas or electricity, forming a blanket of vapor 84 inches deep.

Ample heat input assures cleaning capacity of 18,000 pounds per hour. An outside water jacket and inside water coils give double protection against vapor loss. Economical operation is assured by an automatic control system. Depending upon size, parts degreased by the unit may be removed clean and dry in 1 to 15 minutes.

Check No. 8 on Reply Card for more Details

Bar Feed Maintains Tolerance

Close length tolerances can be maintained on production runs using an automatic bar feed for hand and automatic screw machines and turret lathes, developed by OK Specialty Co. Inc., 910 W. Lake St., Chicago 7, Ill. Feed will handle 12 foot stock bars of all shapes and sizes and will feed



any required length to the stop. Only limit is the inside diameter of the machine tool spindle. Use of exact size polished stock is permitted, thus saving additional operation.

Bar feed tube is adjustably mounted on two tripod standards. Operation is on low air pressure, such as that supplied by a ¼-hp compressor. A plunger operating in the pneumatic feed tube correctly and accurately positions and aligns the bar stock in the spindle. Plunger stops short of the collet jaws, the final stub not being pushed out of the collet to damage tools.

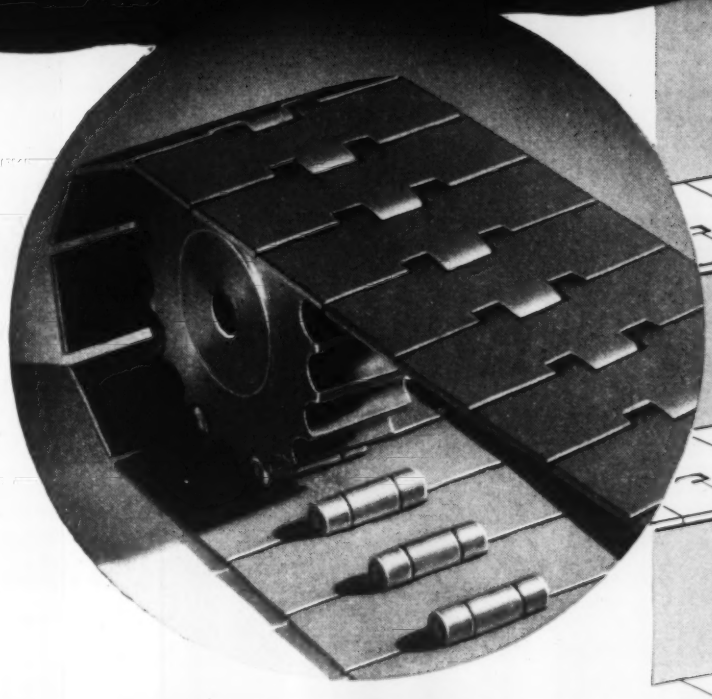
Check No. 9 on Reply Card for more Details

Motor Roller Units

Loewy Construction Co. Inc., division of Hydropress Inc., 570 Lexington Ave., New York 22, N. Y., is introducing individual motor-roller units designed for rough handling and heavy service in rolling mill installation, pipe mill, etc. Each of the rollers, together with its motor and supporting bracket, form one individual unit. No reduction gear is required. Complete integral unit is carried in slot in the supporting bracket. Slot is perpendicular for rigid mounting of motor and rollers in horizontal position.

Heavy duty motor is provided with antifriction bearings and a heavy

For Conveying Small Containers, Packages and Parts . .



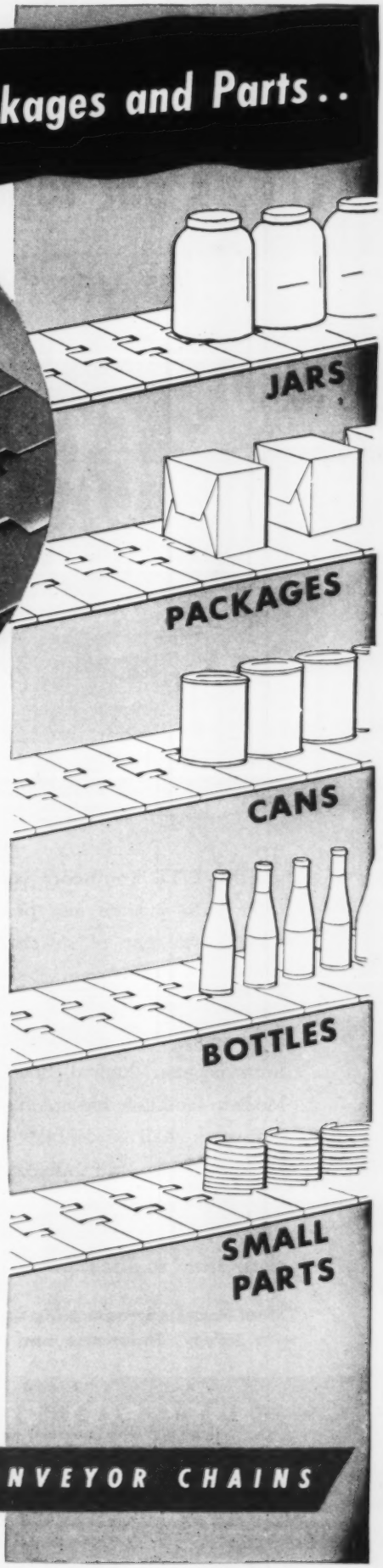


TABLE TOP IS TOPS!

Small parts and packages . . . bottles, cans and jars, Rex Table Top offers the most efficient, economical and convenient method of materials handling.

Available in both stainless and case-hardened steel, Table Top is a natural for moving small parts through heat-treatment ovens and other processing steps. Its continuous carrying surface, provided by the exclusive interlocking hinged joint construction, assures smooth, steady, tip-free conveying for bottles and jars. There's no expensive breakage and spillage with Table Top on the job.

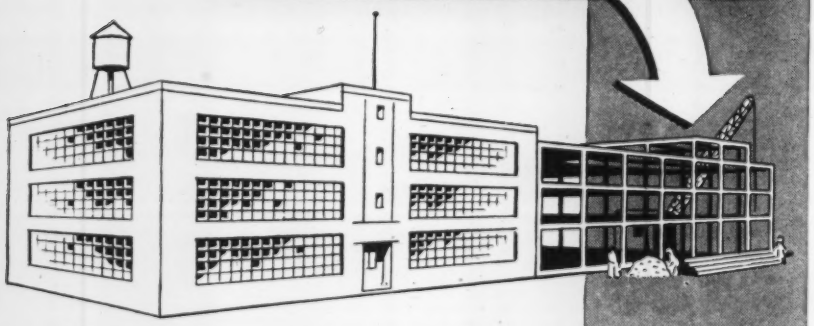
Rex Table Top Conveyor Chain is simplicity itself. A one-piece platform link and a pin are the only parts. There are no attachments to loosen or "wobble" . . . no pockets to catch and hold foreign material. Sprocket tooth bearing pressure is spread over the entire length of the joint . . . giving unusually wide bearing area. Pin is relieved of all load when flexing because each sprocket tooth contacts both leading and following links simultaneously. Table Top just has to last longer.

For all the facts, send for your copy of Bulletin No. 47-15. Chain Belt Company, 1660 West Bruce Street, Milwaukee 4, Wis.

CHAIN BELT REX COMPANY

. . . DRIVE AND CONVEYOR CHAINS

Let us get together on your plant EXPANSION



FORT PITT Engineers will gladly work with you on any problem involving the use of structural steel. Whether you are interested in just a source of supply for the structural steel or the completely erected job—here is your logical headquarters. Modern facilities, top-notch engineering, over half a century of sound experience, and an unexcelled reputation for performance and responsibility. *Yes, let's get together on your plant expansion.*

"Steel Permits Streamlining Construction with Safety, Endurance and Economy"

AISC — American Institute of Steel Construction, Inc. — Formed 1921

FORT PITT BRIDGE WORKS

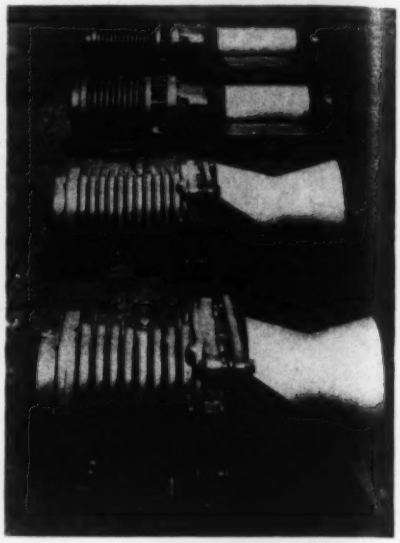
Member American Institute of Steel Construction

General Offices, Pittsburgh, Pa. . . . Plant at Canonsburg, Pa.

BRANCH OFFICES

NEW YORK, N.Y. . . 441 Lexington Avenue
CLEVELAND, OHIO . . . . Builkley Building
COLUMBUS, OHIO . Huntington Bank Bldg.
DETROIT, MICHIGAN . New Center Building

steel shaft for carrying the roller. Motor rotor is of squirrel cage type and entirely shock-proof. Loader has a low inertia, making it suitable for frequent start and stop operation.



Stator windings are glass-insulated wire and impregnated with a silicon varnish capable of withstanding temperature of 350° F.

Check No. 10 on Reply Card for more Details

Tool Drills Deep Holes

Drilling deep holes with automatic screw machines has been enhanced by a deep hole drilling tool offered by Boyar-Schultz Corp., 2110 Walnut St., Chicago 12, Ill. Tool is designed with an oscillating action in the head

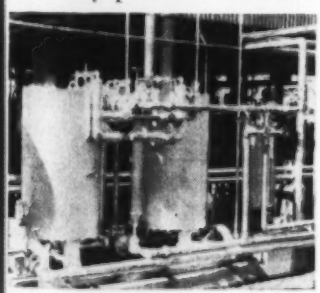
of the holder which breaks up chips into small particles and dissipates them along the flutes of the drill. With pullouts infrequent, drilling time is shortened. Drills last longer because heat from friction of chips against drill is reduced.

More grinds between redrilling lengthens drill life. Tool is adjustable to compensate for misalignment between turret and spindle. Free machining, stainless and commercial

IF the compressed air in your instrument lines and process-control lines holds moisture, rust or oil, you're in trouble. Instrument readings can go haywire . . . air-line valves can stick . . . controls can go entirely "off the beam" . . . the whole shootin' match can literally blow up!

Isn't it silly to install an elaborate remote process control system and then not keep the pressure air *clean* and DRY! *Dry air can't freeze* . . . can't form rust.

It is so easy to keep the air dry, clean and oil-free with ALCOA Activated Alumina. This reliable desiccant effectively prevents moisture and oil from entering the system.



Courtesy of
Stanolind Oil & Gas Company

The photograph illustrates a typical unit used for maintaining process-control-line air in proper condition. Air is dried by being passed through beds of ALCOA Activated Alumina, alternately, in the two towers at the left. At the right is an oil filter—also charged with ALCOA Activated Alumina—which cleans the air of oil and suspended impurities that may enter system from the compressors.

This thorough conditioning of the air helps insure the efficiency of process-control systems . . . reduces maintenance and operating hazards. (This type of equipment also is used for industrial compressed air and paint-spray systems.)

DON'T FORGET the convenience and economy of ALCOA Aluminum instrument air-line tubing in long lengths.

Let us send you the booklet:
"ACTIVATED ALUMINA—Its Properties and Uses"

This 5⅜" x 8¼", 48-page illustrated booklet gives the properties of ALCOA Activated Alumina and describes many of its applications. Write to: ALUMINUM COMPANY OF AMERICA, CHEMICALS DIVISION, 622G Gulf Building, Pittsburgh 19, Pennsylvania.

Alcoa Chemicals

ALCOA

ALUMINAS and FLUORIDES

ACTIVATED ALUMINAS • CALCINED ALUMINAS • HYDRATED ALUMINAS • TABULAR ALUMINAS • LOW SODA ALUMINAS ALUMINUM FLUORIDE • SODIUM FLUORIDE • SODIUM ACID FLUORIDE • FLUOBORIC ACID • CRYOLITE • GALLIUM

tool steels may be drilled without pullouts to approximately 7 to 10 times diameter of drill. Tool is available in three sizes for automatic screw machines: No. 00, No. 0 and No. 2. It is also adaptable for use on multiple spindle machine.

Check No. 11 on Reply Card for more Details

Caster-Equipped Conveyor Stand

Mounted on four free-swiveling casters with a choice of wheel types and sizes is a caster-equipped U-base stand for 8, 10, 12 and 16-inch belt width Stevedore Jr. power belt conveyors, made by Rapids-Standard Co. Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich. Height of the drive-end of the conveyor with base is adjusted by a telescopic device. If desired, the U-base can be furnished with floor locks at either or both ends to hold the conveyor securely in place.

Check No. 12 on Reply Card for more Details

Geared Motor Increases Torque

Combining a Varidrive which permits instant change of speed in a ratio of 1 to 10 and a heavy duty Syncrogear for increasing the torque is the type VA-GD geared variable speed motor, offered by U. S. Electrical Motors Inc., 200 E. Slauson Ave., Los Angeles 54, Calif. Available in ¼, ⅓, ½ and ¾-hp models, it has speed ranges from 10 to 10,000 rpm.

Frame of the unit is cast aluminum. Slippage is prevented by an Autotaut belt tensioner which automatically compensates for various loads. Gears have a hardness of 45 to 50 Rockwell C. Interior inspection is by loosening four screws and removing the cover plate.

Check No. 13 on Reply Card for more Details

• • •

MORE STORAGE SPACE: To increase the availability of storage space under counters, the F-G-M Rotabin counter, made by Frick-Gallagher Mfg. Co., Philadelphia 2, Pa., provides aisle access to 72 large compartments in twelve 28-inch diameter independently rotating trays. Four stationary spaces are available for large items. Units are made of steel.

Check No. 14 on Reply Card for more Details

PNEUMATIC VIBRATORS: Series 76 pneumatically operated vibrators, introduced by Spo Inc., Cleveland 5, O., are recommended for such applications as removing match plate patterns from sand molds, providing steady flow of powdered or granular materials from hoppers and feeding small parts for assembly. Operating on standard 80 psi air line pressure, units deliver from 2200 to 6000 impacts per minute.

Check No. 15 on Reply Card for more Details

BENCH GAGE: No. 652 universal dial bench gage, offered by L. S. Starrett Co., Athol, Mass., is designed for fast, accurate and economical inspection of all types of small parts. Plus or minus variations from size 0.0005-inch can be read off instantly from the indicator. Dial can be adjusted relative to zero and locked with the bezel clamp.

Check No. 16 on Reply Card for more Details

DUPLICATES CONTOURS: A device that makes it possible to reproduce on transparent paper the exact contour of irregular surfaces is announced by Inter-Lakes Engineering Co., Detroit 7, Mich. Known as the Dupligraph, it is made in many sizes.

Check No. 17 on Reply Card for more Details

SEES FIRE: Based on the photoelectric principle, fire protection system FD-10, is capable of detecting a very small fire. Developed by Fireye Corp., Cambridge 42, Mass., it offers a self-monitoring feature which provides assurance that the equipment is operating and in constant readiness to detect fire.

Check No. 18 on Reply Card for more Details

CONTROL DRIVE: Bailey Meter Co., Cleveland, O., has developed a characterized control drive that can be "tuned" to requirements of a special application. The completely enclosed air-operated drive makes it possible to parallel characteristics of a driven device with those of other equipment, thereby securing a unified system. Unit is available in two sizes.

Check No. 19 on Reply Card for more Details

BOX WITH CASTERS: A new corrugated steel box with heavy duty casters is announced by Palmer-Shile Co., Detroit 27, Mich. It is convenient for scrap or parts handling. Units are all welded construction and are built to customer specifications.

Check No. 20 on Reply Card for more Details

CONVERTIBLE RECORDER: For recording temperatures and pressures under a variety of changing conditions, a new 6-inch chart recorder is introduced by Gotham Instruments, New York 12, N. Y. Temperature and pressure systems of this unit are interchangeable so that instrument may be converted at any time from a temperature to a pressure recorder or vice versa, or changed in range of temperatures or pressures recorded.

Check No. 21 on Reply Card for more Details

MILLING MACHINE CHUCK: Johansson Quick-Grip milling machine chucks, offered by Eric S. Johnson Co., Chicago 11, Ill., feature a bayonet locking nut that makes mill shanks run true. Chucks are fastened to the machine spindle by a pullrod or by four bolts. Units are available in five sizes.

Check No. 22 on Reply Card for more Details

KEY CHUCKS: Improved key chucks featuring one piece construction of gear and threaded nut are announced by Supreme Products Inc., Chicago, Ill. Chucks are interchangeable with models of other manufacturers.

Check No. 23 on Reply Card for more Details

STEEL SCAFFOLDING: For light duty construction and maintenance, steel scaffolding is announced by Safway Steel Products Inc., Milwaukee 13, Wis. Basic end frame members measure 4 feet wide by 4 feet high. Parts may be assembled in scaffolds or towers as high as 40 feet and for loads not exceeding 50 pounds per square foot.

Check No. 24 on Reply Card for more Details

FLEXIBLE COUPLING: Specially designed concave jaw surface of the new flexible coupling, introduced by Gerbing Mfg. Corp., Northbrook, Ill., actually holds resilient synthetic rubber insert or spider in position. Unit is available for shafts from ½ to 1⅝ inches and horsepower ranges from fractional to 25.

Check No. 25 on Reply Card for more Details

FASTENING DEVICES: Holub Industries Inc., Sycamore, Ill., offers three new types of Hi fastening devices in 66 sizes. Toggle bolts are designed in three styles: Spring wing and two one piece wing tumble types. Machine screw lead anchors are available in 10 sizes ranging from screw thread size 6-32 to ¾-10. Expansion bolts are available as a complete unit.

Check No. 26 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

DEMAND that has been keeping steel production at or near capacity is now even more intense. The added pressure comes almost entirely from civilian requirements, not from military.

Fear that military requirements will cut in on civilian production is prompting consumers not to delay any purchases they had contemplated. This not only sustains the already high level of demand but intensifies it further. This prompts metalworking plants to press their demands for steel.

TIGHTENING UP— To avoid being buried hopelessly under orders, mills are being increasingly selective and cautious in bookings. They know too that the nation's military situation might make it impossible to fulfill any long-term commitments for civilian requirements. The few military orders that have come forth since the start of the Korean war are being given the green light by steel producers.

Steel producers booking orders on a quarterly basis are in general delaying the opening of fourth-quarter books because of the uncertainty as to what the Korean situation will bring. Many orders are actually being returned with little or no consideration; those are principally from consumers having no established relations with the mills.

ANOTHER SQUEEZE— Notable among products on which demand has intensified are carbon plates. The added pressure comes from builders of railroad freight cars as a result of a war-inspired flurry of interest in car procurement by railroads. Recognizing that regular plate mills may be unable to meet these requirements, one steel producer is exploring the feasibility of utilizing its continuous sheet and strip mill to help supply the plate tonnage, as was done during World War II.

NICKEL RATIONING— Procurement of nickel-bearing stainless and alloy steels may become increasingly difficult as a result of nickel rationing by International Nickel Co. The rationing follows a tightening of government stockpiling requirements and an increasing consumption by steel producers. International Nickel Co.'s sales of nickel in the last three months are said to have been more than 25 per cent over the rate in its best postwar year, 1948.

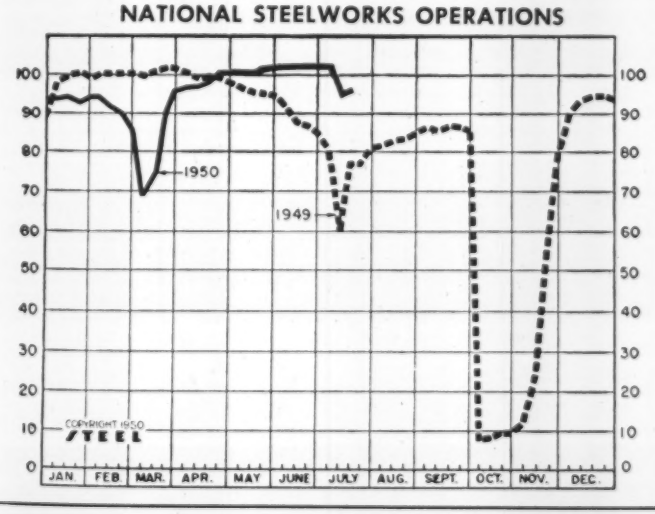
GOING UP— Responding to the heavy demand for steel, ingot production recovered one percentage point last week from the holiday decline and registered 96 per cent of capacity despite some interference from vacations.

UPBOUND— Price changes last week on steel were confined largely to additional companies making upward revisions on products containing nickel, the price of which rose several weeks ago. STEEL's weighted price index on finished steel held unchanged at 156.69 per cent; its price composite also was steady at $94.36. In the nonferrous field there were increases last week on lead and tin. Each of two days were marked with half-cent increases per pound on lead.

LACKADAISICAL— Weakness in demand for scrap continued last week and STEEL's scrap price composite eased off to $36.75 from the preceding week's $36.83. Foreign scrap in sizable quantities continues to come into the country. The Korean war is putting no upward pressure on scrap prices, for even if all-out mobilization comes the steel industry cannot use much more scrap than it is now consuming at near capacity operations. Nickel rationing is further strengthening the strong demand for nickel scrap; even less desirable grades of nickel-bearing scrap are increasingly attractive.

BUSINESS BETTER— Pig iron requirements are heavier than had been expected for the summer as a result of an increase in demand for castings. Steadiness in pig iron prices leaves STEEL's composites unchanged. They are: No. 2 foundry, $46.47; basic, $45.97; and malleable, $47.27.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended July 15	Change	Same Week 1949	Same Week 1948
Pittsburgh	98.5	+ 4*	67.5	88
Chicago	102.5	+ 4.5*	90	85
Eastern Pa.	96.5	0	80	90
Youngstown	107	+ 2	75	94
Wheeling	102.5	+ 9.5	81	92
Cleveland	52	0	65	94.5
Buffalo	104	0	87.5	101
Birmingham	100	0	100	100
New England	60	0	40	83
Cincinnati	98	+ 8	96	98
St. Louis	84.5	+ 6.5	75.5	82
Detroit	105	+ 1	102	100
Western	95	— 3	75	..
Estimated national rate	96	+ 1	77	90.5

Based on weekly steelmaking capacity of 1,906,267 net tons for 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948.

* Change from revised rate.

Composite Market Averages

	July 13 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39) av.=100)	156.69	156.69	156.58	152.80	101.78
Index in cents per lb. ..	4.245	4.245	4.242	4.139	2.757
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$94.36	$94.36	$94.36	$91.82	$58.27
No. 2 Fdry. Pig Iron, GT	46.47	46.47	46.47	46.07	24.67
Basic Pig Iron, GT	45.97	45.97	45.97	45.60	24.00
Malleable Pig Iron, GT..	47.27	47.27	47.27	47.27	25.29
Steelmaking Scrap, GT..	36.75	36.83	39.33	19.17	19.17

Weighted finished steel index based on average shipments and prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	July 13 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh....	3.45	3.45	3.45	3.35	2.25
Bars, H.R., Chicago	3.45	3.45	3.45	3.35	2.25
Bars, C.F., Pittsburgh	4.10–15	4.10–15	4.10–15	3.95–4.00	2.65
Shapes, Std., Pittsburgh ..	3.40	3.40	3.40	3.25	2.10
Shapes, Std., Chicago	3.40	3.40	3.40	3.25	2.10
Plates, Pittsburgh	3.50	3.50	3.50	3.40	2.25
Plates, Chicago	3.50	3.50	3.50	3.40	2.25
Plates, Coatesville, Pa. ..	3.60	3.60	3.60	3.50	2.25
Plates, Sparrows Point, Md.	3.50	3.50	3.50	3.40	2.25
Plates, Claymont, Del. ...	3.60	3.60	3.60	3.50	2.25
Sheets, H.R., Pittsburgh..	3.35	3.35	3.35	3.25	2.20
Sheets, H.R., Chicago ...	3.35	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh ..	4.10	4.10	4.10	4.00	3.05
Sheets, C. R., Chicago	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.40	4.40	4.40	4.40	3.70
Strip, H.R., Pittsburgh ...	3.25–50	3.25–50	3.25–50	3.25	2.10
Strip, H.R., Chicago	3.25	3.25	3.25	3.25	2.10
Strip, C.R., Pittsburgh ...	4.15–50	4.15–50	4.15–50	4.00	2.80
Strip, C.R., Chicago	4.30	4.30	4.30	4.00–15	2.90
Strip, C.R., Detroit	4.35–95	4.35–95	4.35–95	4.20–25	2.90
Wire, Basic, Pittsburgh ..	4.50	4.50	4.50	4.15	2.75
Nails, Wire, Pittsburgh ...	5.30	5.30	5.30	5.15	2.90
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts.(NT)	$63.00	$63.00	$63.00	$61.00	$42.00
Sheet bar, mill (NT)	58.00	58.00	58.00	67.00	36.00
Wire rods, ½-⅝", Pitts...	3.85	3.85	3.85	3.40	2.15

PIG IRON, Gross Ton

Bessemer, Pitts.	$47.00	$47.00	$47.00	$47.00	$25.50
Basic, Valey	46.00	46.00	46.00	46.00	24.50
Basic, del. Phila.	49.44	49.44	49.44	49.39	26.34
No. 2 Fdry, Pitts.	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, Chicago	46.50	46.50	46.50	46.25	25.00
No. 2 Fdry, Valley	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, del. Phila. ...	49.94	49.94	49.94	49.89	26.84
No. 2 Fdry, Birm.	42.38	42.38	42.38	39.38	21.38
No. 2 Fdry (Birm.)del.Cin.	49 08	49 08	49.08	45.43	25.06
Malleable, Valley	46.50	46.50	46.50	46.50	25.00
Malleable, Chicago	46.50	46.50	46.50	46.50	25.00
Charcoal, Lyles, Tenn. ...	60.00	60.00	60.00	66.00	33.00
Ferromanganese, Etna, Pa.	175.00	175.00	175.00	175.00	140.33*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts...	$40.00	$40.00	$45.00	$21.00	$20.00
No. 1 Heavy Melt. E. Pa..	33.00	33.00	35.50	17.00	18.75
No. 1 Heavy Melt. Chicago	37.50	37.50	37.50	19.50	18.75
No. 1 Heavy Melt. Valley.	40.75	41.50	43.75	18.50	20.00
No. 1 Heavy Melt. Cleve..	38.50	39.50	41.75	15.00	19.50
No. 1 Heavy Melt. Buffalo	36.75	39.00	39.75	19.25	19.25
Rails, Rerolling, Chicago..	47.50	47.50	49.50	27.75	22.25
No. 1 Cast, Chicago	44.50	44.50	47.00	29.50	20.00

COKE, Net Ton

Beehive, Furn., Connlsvl...	$14.25	$14.25	$14.25	$13.25	$7.50
Beehive, Fdry., Connlsvl...	15.50	15.50	15.50	15.75	8.25
Oven Fdry., Chicago	21.00	21.00	21.00	20.00	13.35

NONFERROUS METALS

Copper, del. Conn.	22.50	22.50	22.50	17.625	12.00
Zinc, E. St. Louis	15.00	15.00	15.00	9.00	8.25
Lead, St. Louis	11.80	10.80	11.80	13.80–85	6.35
Tin, New York	90.00	80.125	77.625	103.00	52.00
Aluminum, del.	17.50	17.50	17.50	17.00	15.00
Antimony, Laredo, Tex. ..	24.50	24.50	24.50	38.50	14.50
Nickel, refinery, duty paid.	48.00	48.00	48.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$48.00	$48.50	$49.00	$49.50
Newark,del.	50.63	51.13	51.63	52.13
Brooklyn,N.Y.,del.	....	52.79	53.29	....
Birmingham District				
AlabamaCity,Ala. R2	41.88	42.38	....	....
Birmingham R2	41.88	42.38	....	....
Birmingham S9	41.88	42.38	....	....
Woodward,Ala. W15	41.88	42.38	....	....
Cincinnati,del.	....	49.08	....	....
Buffalo District				
Buffalo H1, R2	46.00	46.50	47.00	....
Tonawanda,N.Y., W12	46.00	46.50	47.00	....
N.Tonawanda,N.Y., T9	....	46.50	47.00	....
Boston, del.	55.26	55.76	56.20	....
Rochester,N.Y.,del.	48.63	49.13	49.63	....
Syracuse,N.Y.,del.	49.58	50.08	50.58	....
Chicago District				
Chicago I-3	46.00	46.50	46.50	47.00
Gary,Ind. C3	46.00	....	46.50	....
IndianaHarbor,Ind. I-2	46.00	....	46.50	....
So.Chicago,Ill. W14, Y1	46.00	46.50	46.50	....
So.Chicago,Ill. C3	46.00	....	46.50	47.00
Milwaukee,del.	47.89	48.39	48.39	48.89
Muskegon,Mich.,del.	....	51.98	51.98	....
Cleveland District				
Cleveland A7	46.00	46.50	46.50	47.00
Cleveland R2	46.00	46.50	46.50	....
Akron,del. from Cleve.	48.39	48.89	48.89	49.39
Lorain,O. N3	46.00	....	....	47.00
Duluth I-3	....	....	46.50	....
Erie,Pa. I-3	46.00	46.50	46.50	47.00
Everett,Mass. E1	....	50.50	51.00	....
Fontana,Calif. K1	52.00	52.50	....	....
Geneva,Utah G1	46.00	46.50	....	....
Seattle,Tacoma,Wash.,del.	....	54.20	....	....
Portland,Oreg.,del.	....	54.20	....	....
LosAngeles,SanFrancisco,del. ...	53.70	54.20	....	....
GraniteCity,Ill. M10	47.90	48.40	48.90	....
St.Louis,del. (incl. tax)	48.65	49.15	49.65	....
Ironton,Utah C11	46.00	46.50	....	....
Minnequa,Colo. C10	47.00	47.50	47.50	....
Pittsburgh District				
NevilleIsland,Pa. P6	46.00	46.50	46.50	47.00
Pitts.N.&S. sides, Ambridge, Aliquippa,del.	47.19	47.69	47.69	48.19
McKeesRocks,del.	46.95	47.45	47.45	47.95
Lawrenceville,Homestead, McKeesport,Monaca,del.	47.44	47.94	47.94	48.44
Verona,del.	47.90	48.40	48.40	48.90
Brackenridge,del.	48.13	48.63	48.63	49.13
Bessemer,Pa. C3	46.00	....	46.50	47.00
Clairton,Rankin,So.Duquesne,Pa. C3	46.00	....	....	....
McKeesport,Pa. N3	46.00	....	....	47.00
Sharpsville,Pa. S6	....	....	46.50	47.00
Steelton,Pa. B2	48.00	48.50	49.00	49.50
Steubenville,O. W10	46.00	....	....	....
Swedeland,Pa. A3	48.00	48.50	49.00	49.50
Philadelphia,del.	49.44	49.94	50.44	50.94
Toledo,O. I-3	46.00	46.50	46.50	47.00
Cincinnati,del.	51.01	51.51	....	....
Troy,N.Y., R2	48.00	48.50	49.00	49.50
Youngstown District				
Hubbard,O. Y1	46.00	46.50	46.50	....
Youngstown C3	46.00	....	....	47.00
Youngstown Y1	46.00	46.50	46.50	47.00
Mansfield,O.,del.	50.26	50.76	50.76	51.26

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.

Phosphorous: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si to 11.50%)

Jackson,O. G2, J1	$57.00
Buffalo H1	58.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for 0.045% max. P)

NiagaraFalls,N.Y. P15	$71.50
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	77.00
Keokuk, Iowa, OH & Fdry., 12½ lb. piglets, frt. allowed K2.	82.00
Wenatchee, Wash., OH & Fdry., frt. allowed K2	77.00

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged from silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$60.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$51.00
Steelton,Pa. B2	54.00
Philadelphia delivered	57.00
Troy,N.Y. R2	54.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL July 13, 1950; cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)
Detroit R7 ..... $50.00
Munhall,Pa. C3 ..... 50.00

INGOTS, Alloy (NT)
Detroit R7 ..... $51.00
Houston,Tex. S5 ..... 59.00
Midland,Pa. C18 ..... 51.00
Munhall,Pa. C3 ..... 54.00
So.Duquesne,Pa. C3 .. 51.00

BILLETS, BLOOMS & Slabs Carbon, Rerolling (NT)
Bessemer,Pa. C3 .... $53.00
Clairton,Pa. C3 ..... 53.00
Conshohocken,Pa. A3 .. 58.00
Ensley,Ala. T2 ..... 53.00
Fairfield,Ala. T2 ..... 53.00
Fontana,Cal. K1 ..... 72.00
Gary,Ind. C3 ..... 53.00
Johnstown,Pa. B2 ..... 53.00
Lackawanna,N.Y. B2 .. 53.00
Munhall, Pa. C3 ..... 53.00
So.Chicago,Ill. C3 .... 53.00
So.Duquesne,Pa. C3 ... 53.00

Carbon, Forging (NT)
Bessemer,Pa. C3 .... $63.00
Buffalo R2 ..... 63.00
Canton,O. R2 ..... 63.00
Clairton,Pa. C3 ..... 63.00
Cleveland R2 ..... 63.00
Conshohocken,Pa. A3 .. 65.00
Detroit R7 ..... 66.00
Ensley,Ala. T2 ..... 63.00
Fairfield,Ala. T2 ..... 63.00
Fontana,Calif. K1 .... 82.00
Gary,Ind. C3 ..... 63.00
Geneva,Utah G1 ..... 63.00
Houston,Tex. S5 ..... 71.00
Ind.Harbor,Ind. I-2 ... 63.00
Johnstown,Pa. B2 .... 63.00
Lackawanna,N.Y. B2 .. 63.00
LosAngeles B3 ..... 82.00
Munhall,Pa. C3 ..... 63.00
Seattle B3 ..... 82.00
So.Chicago C3,R2,W14 .. 63.00
So.Duquesne,Pa. C3 .. 63.00
So.SanFrancisco B3 ... 82.00

Alloy (NT)
Bethlehem,Pa. B2 .... $66.00
Buffalo R2 ..... 66.00
Canton,O. R2, T7 .... 66.00
Conshohocken,Pa. A3 .. 68.00
Detroit R7 ..... 66.00
Fontana,Calif. K1 .... 85.00
Gary,Ind. C3 ..... 66.00
Houston,Tex. S5 ..... 74.00
Ind.Harbor,Ind. Y1 .... 66.00
Johnstown,Pa. B2 .... 66.00
Lackawanna,N.Y. B2 .. 66.00
LosAngeles B3 ..... 86.00
Massillon,O. R2 ..... 66.00
Midland,Pa. C18 ..... 66.00
Munhall,Pa. C3 ..... 66.00
Sharon,Pa. S3 ..... 66.00
So.Chicago C3,R2,W14 .. 66.00
So.Duquesne,Pa. C3 .. 66.00
Warren,O. C17 ..... 66.00
Youngstown Y1 ..... 66.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 ..... $76.00
Cleveland R2 ..... 76.00
Gary,Ind. C3 ..... 76.00
Ind.Harbor,Ind. I-2 ... 76.00
Massillon,O. R2 ..... 76.00
So.Chicago,Ill. R2 .... 76.00
So.Duquesne,Pa. C3 .. 76.00

SKELP
Aliquippa,Pa. J5 ..... 3.25
Munhall,Pa. C3 ..... 3.15
Warren,O. R2 ..... 3.15
Youngstown C3, R2 .... 3.15

WIRE RODS
AlabamaCity,Ala. R2 .. 3.85
Buffalo W12 ..... 3.85
Cleveland A7 ..... 3.85
Donora,Pa. A7 ..... 3.85
Fairfield,Ala. T2 ..... 3.85
Houston,Tex. S5 ..... 4.25
Ind.Harbor,Ind. Y1 .... 3.85
Johnstown,Pa. B2 .... 3.85
Joliet,Ill. A7 ..... 3.85
LosAngeles B3 ..... 4.65
Minnequa,Colo. C10 .... 4.10
Monessen,Pa. P7 ..... 3.85
No.Tonawanda,N.Y. B11 .. 3.85
Pittsburg,Calif. C11 .... 4.50
Portsmouth,O. P12 .... 3.85
Roebling,N.J. R5 ..... 3.95
So.Chicago,Ill. R2 ..... 3.85
SparrowsPoint,Md. B2 .. 3.95
Sterling,Ill.(1) N15 .... 3.85
Struthers,O. Y1 ..... 3.85
Torrance,Calif. C11 .... 4.65
Worcester A7 ..... 4.15

BEARING PILES
Munhall,Pa. C3 ..... 3.40
So.Chicago,Ill. C3 ..... 3.40

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 .. 3.40
Aliquippa,Pa. J5 ..... 3.40
Bessemer,Ala. T2 ..... 3.40
Bethlehem,Pa. B2 ..... 3.45
Clairton,Pa. C3 ..... 3.40
Fairfield,Ala T2 ..... 3.40
Fontana,Calif. K1 ..... 4.00
Gary,Ind. C3 ..... 3.40
Geneva,Utah G1 ..... 3.40
Houston, Tex. S5 ..... 3.80
Ind.Harbor,Ind. I-2 .... 3.40
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.00
Lackawanna,N.Y. B2 .. 3.45
LosAngeles B3 ..... 4.00
Minnequa,Colo. C10 .... 3.75
Munhall,Pa. C3 ..... 3.40
Niles,Calif.(22) P1 .... 4.02
Phoenixville,Pa. P4 .... 3.30
Portland,Oreg. O4 ..... 4.05
Seattle B3 ..... 4.05
So.Chicago,Ill. C3, W14 .. 3.40
So.SanFrancisco B3 .... 3.95
Torrance,Calif. C11 .... 4.00
Weirton,W.Va. W6 .... 3.40

Alloy Stand. Shapes
Clairton,Pa. C3 ..... 4.05
Fontana,Calif. K1 ..... 5.25
Munhall,Pa. C3 ..... 4.05
So.Chicago,Ill. C3 ..... 4.05

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ..... 5.15
Bessemer,Ala. T2 ..... 5.15
Bethlehem,Pa.(14) B2 .. 5.20
Clairton,Pa. C3 ..... 5.15
Fairfield,Ala. T2 ..... 5.15
Fontana,Calif. K1 ..... 5.75
Gary,Ind. C3 ..... 5.15
Geneva,Utah G1 ..... 5.10
Ind.Harbor,Ind. I-2, Y1 .. 5.15
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y.(14)B2 5.20
LosAngeles B3 ..... 5.75
Munhall,Pa. C3 ..... 5.15
So.Chicago,Ill. C3 ..... 5.15
So.SanFrancisco B3 .... 5.70
Struthers,O. Y1 ..... 5.15

Wide Flange
Bethlehem,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 .. 3.45
Munhall,Pa. C3 ..... 3.40
So.Chicago,Ill. C3 ..... 3.40

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ..... 5.20
Lackawanna,N.Y. B2 .. 5.20
Munhall,Pa. C3 ..... 5.10
So.Chicago,Ill. C3 ..... 5.10

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 .... 4.20
Lackawanna,N.Y. B2 .. 4.20
Munhall,Pa. C3 ..... 4.20
So.Chicago,Ill. C3 ..... 4.20
Weirton,W.Va. W6 .... 4.20

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 5.35
Bessemer,Ala. T2 ..... 5.35
Clairton,Pa. C3 ..... 5.35
Cleveland J5, R2 ..... 5.35
Conshohocken,Pa. A3 .. 5.35
Ecorse,Mich. G5 ..... 5.60
Fairfield,Ala. T2 ..... 5.35
Fontana,Calif. K1 ..... 5.95
Gary,Ind. C3 ..... 5.35
Geneva,Utah G1 ..... 5.35
Ind.Harbor,Ind. I-2, Y1 .. 5.35
Johnstown,Pa. B2 ..... 5.35
Munhall,Pa. C3 ..... 5.35
Pittsburgh J5 ..... 5.35
Sharon,Pa. S3 ..... 5.35
So.Chicago,Ill. C3 ..... 5.35
SparrowsPoint,Md. B2 .. 5.35
Warren,O. R2 ..... 5.35
Youngstown Y1 ..... 5.35

PLATES, Open-Hearth Alloy
Claymont,Del. W16 .... 4.50
Coatesville,Pa. L7 .... 4.50
Conshohocken,Pa. A3 .. 4.40
Fontana,Calif. K1 ..... 5.40
Gary,Ind. C3 ..... 4.40
Johnstown,Pa. B2 ..... 4.40
Munhall,Pa. C3 ..... 4.40
Sharon,Pa. S3 ..... 4.40
So.Chicago,Ill. C3 ..... 4.40
SparrowsPoint,Md. B2 .. 4.40

FLOOR PLATES
Cleveland J5 ..... 4.55
Conshohocken,Pa. A3 .. 4.55
Harrisburg,Pa. C5 ..... 4.55
Ind.Harbor,Ind. I-2 .... 4.55
Munhall,Pa. C3 ..... 4.55
So.Chicago,Ill. C3 ..... 4.55

PLATES, Ingot Iron
Ashland,c.l.(15) A10 ... 3.75
Ashland,lcl(15) A10 ... 4.25
Cleveland,cl R2 ..... 4.10
Warren,O.cl R2 ..... 4.10

PLATES, Wrought Iron
Economy,Pa. B14 ..... 7.85

PLATES, Carbon Steel
AlabamaCity,Ala. R2 .. 3.50
Aliquippa,Pa. J5 ..... 3.50
Ashland,Ky.(15) A10 .. 3.50
Bessemer,Ala. T2 ..... 3.50
Clairton,Pa. C3 ..... 3.50
Claymont,Del. W16 .... 3.60
Cleveland J5, R2 ..... 3.50
Coatesville,Pa. L7 ..... 3.60
Conshohocken,Pa. A3 .. 3.60
Ecorse,Mich. G5 ..... 3.75
Fairfield,Ala. T2 ..... 3.50
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.50
Geneva,Utah G1 ..... 3.50
Harrisburg,Pa. C5 ..... 3.85
Houston,Tex. S5 ..... 3.90
Ind.Harbor,Ind. I-2,Y1.. 3.50
Johnstown,Pa. B2 ..... 3.50
Lackawanna,N.Y. B2 .. 3.50
Minnequa,Colo. C10 .... 4.30
Munhall,Pa. C3 ..... 3.50
Pittsburgh J5 ..... 3.50
Seattle B3 ..... 4.40
Sharon,Pa.S3 ..... 3.50
So.Chicago,Ill. C3, W14 .. 3.50
SparrowsPoint,Md. B2 .. 3.50
Steubenville,O. W10 .... 3.50
Warren,O. R2 ..... 3.50
Weirton,W.Va. W6 .... 3.50
Youngstown C3, R2, Y1 .. 3.50

PLATES (Universal Mill)
Fontana,Calif. K1 ..... 4.40

PLATES, Carbon A.R.
Fontana,Calif. K1 .... 5.25

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 .. 3.45
Aliquippa,Pa. J5 ..... 3.45
Alton,Ill.(1) L1 ..... 3.45
Atlanta,Ga. A11 ..... 3.60
Bessemer,Ala. T2 ..... 3.45
Buffalo R2 ..... 3.45
Canton,O. R2 ..... 3.45
Clairton,Pa. C3 ..... 3.45
Cleveland R2 ..... 3.45
Ecorse,Mich. G5 ..... 3.65
Emeryville,Calif. J7 .... 4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2, Y1 .. 3.45
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.05
Lackawanna,N.Y. B2 .. 3.45
LosAngeles B3 ..... 4.15
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 .... 3.85
Niles,Calif. P1 ..... 4.17
N.Tonawanda,N.Y. B11 .. 3.45
Pittsburg,Calif. C11 .... 4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
Seattle B3, N14 ..... 4.20
So.Chicago C3, R2, W14 .. 3.45
So.Duquesne,Pa. C3 .... 3.45
S.SanFran.,Cal. B3 .... 4.20
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 .... 4.15
Weirton,W.Va. W6 .... 3.45
Youngstown C3, R2 .... 3.45

BAR SIZE ANGLES; S. SHAPES
Aliquippa,Pa. J5 ..... 3.45
Atlanta A11 ..... 3.60
Johnstown,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 .. 3.45
Niles,Calif. P1 ..... 4.17
Pittsburgh(23) J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
SanFrancisco S7 ..... 4.00
Weirton,W.Va. W6 .... 3.45

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 ..... 3.65

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ..... 3.95
Buffalo R2 ..... 3.95
Canton,O. R2, T7 ..... 3.95
Clairton,Pa. C3 ..... 3.95
Ecorse,Mich. G5 ..... 4.25
Fontana,Calif. K1 ..... 4.95
Gary,Ind. C3 ..... 3.95
Houston,Tex. S5 ..... 4.35
Ind.Harbor,Ind. I-2, Y1 .. 3.95
Johnstown,Pa. B2 ..... 3.95
KansasCity,Mo. S5 .... 4.55
Lackawanna,N.Y. B2 .. 3.95
LosAngeles B3 ..... 5.00
Massillon,O. R2 ..... 3.95
Midland,Pa. C18 ..... 3.95
So.Chicago C3, R2, W14 .. 3.95
So.Duquesne,Pa. C3 .... 3.95
Struthers,O. Y1 ..... 3.95
Warren,O. C17 ..... 3.95
Youngstown C3 ..... 3.95

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. C3 ..... 4.20
Fontana,Calif. K1 ..... 4.95
Gary,Ind. C3 ..... 4.20
Youngstown C3 ..... 4.20

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 ..... 5.20
Atlanta A11 ..... 5.35
Bessemer,Ala. T2 ..... 5.20
Bethlehem,Pa. B2 ..... 5.20
Clairton,Pa. C3 ..... 5.20
Cleveland R2 ..... 5.20
Ecorse,Mich. G5 ..... 5.40
Fairfield,Ala. T2 ..... 5.20
Fontana,Calif. K1 ..... 6.25
Gary,Ind. C3 ..... 5.20
Ind.Harbor,Ind. I-2, Y1 .. 5.20
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y. B2 .. 5.20
LosAngeles B3 ..... 5.90
Pittsburgh J5 ..... 5.20
So.Duquesne,Pa. C3 .... 5.20
So.SanFrancisco B3 .... 5.95
Struthers,O. Y1 ..... 5.20
Youngstown C3 ..... 5.20

BARS, Cold-Finished Carbon
Aliquippa,Pa. K5 ..... 4.15
Ambridge,Pa. W18 ..... 4.15
BeaverFalls,Pa. M12,R2 .. 4.15
Buffalo B5 ..... 4.15
Camden,N.J. P13 ..... 4.60
Carnegie,Pa. C12 ..... 4.15
Chicago W18 ..... 4.15
Cleveland A7, C20 .... 4.15
Detroit P17 ..... 4.30
Donora,Pa. A7 ..... 4.15
Ecorse,Mich. G5 ..... 4.35
Elyria,O. W8 ..... 4.15
FranklinPark,Ill. N5 .... 4.15
Gary,Ind. R2 ..... 4.15
Hammond,Ind. L2, M13 .. 4.15
Hartford,Conn. R2 ..... 4.55
Harvey,Ill. B5 ..... 4.15
LosAngeles R2 ..... 5.55
Mansfield,Mass. B5 .... 4.55
Massillon,O. R2, R8 ... 4.15
Midland,Pa. C18 ..... 4.15
Monaca,Pa. S17 ..... 4.15
Newark,N.J. W18 ..... 4.55
Plymouth,Mich. P5 .... 4.40
Pittsburgh J5 ..... 4.10
Putnam,Conn. W18 .... 4.55
Readville,Mass. C14 .... 4.55
St.Louis,Mo. M5 ..... 4.55
So.Chicago,Ill. W14 .... 4.15
SpringCity,Pa.(5) K3 .. 4.55
Struthers,O. Y1 ..... 4.15
Waukegan,Ill. A7 ..... 4.15
Youngstown F3, Y1 .... 4.15

BARS, Cold-Finished Alloy
Aliquippa,Pa. K5 ..... 4.90
Ambridge,Pa. W18 ..... 4.90
BeaverFalls,Pa. M12 .... 4.90
Bethlehem,Pa. B2 ..... 4.90
Buffalo B5 ..... 4.90
Canton,O. R2, T7 ..... 4.90
Carnegie,Pa. C12 ..... 4.90
Chicago W18 ..... 4.90
Cleveland A7, C20 ..... 4.90
Detroit P17 ..... 5.05
Donora,Pa. A7 ..... 4.90
Elyria,O. W8 ..... 4.90
Gary,Ind. R2 ..... 4.90
Hammond,Ind. L2, M13 .. 4.90
Hartford,Conn. R2 ..... 5.20
Harvey,Ill. B5 ..... 4.90
Lackawanna,N.Y. B2 .. 4.90
Mansfield,Mass. B5 .... 5.20
Massillon,O. R2, R8 ... 4.90
Midland,Pa. C18 ..... 4.90
Monaca,Pa. S17 ..... 4.90
Newark,N.J. W18 ..... 5.20
Plymouth,Mich. P5 ..... 5.10
So.Chicago,Ill. R2, W14 .. 4.90
Struthers,O. Y1 ..... 4.90
Warren,O. C17 ..... 4.90
Waukegan,Ill. A7 ..... 4.90
Worcester,Mass. A7 .... 5.20
Youngstown F3, Y1 .... 4.90

RAIL STEEL BARS
ChicagoHts. (3) C2, I-2 .. 3.30
ChicagoHts. (4) C2, I-2 .. 3.45
Franklin,Pa.(3, 4) F5 .. 3.45
FortWorth,Tex.(26) T4 .. 4.18
Huntngtn,W.Va.(3) W7 .. 3.45
Marion,O. (3) P11 ..... 3.45
Moline,Ill.(3) R2 ..... 3.40
SouthAvis,Pa.(2) J8 ... 3.30
Williamsport(2,3) S19 .. 3.45

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 .. 8.60
Economy,Pa.(D.R.)B14 .. 11.00
Economy(Staybolt)B14 .. 11.30
Dover,N.J.(Staybolt)U1 .. 15.00
Dover(Eng.Bolt) U1 .. 13.50
Dover(Wrgt.Iron) U1 .. 12.25
McK.Rks.(S.R.) L5 .... 8.60
McK.Rks.(D.R.) L5 ... 11.25
McK.Rks.(Staybolt) L5 .. 12.75

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 .. 3.45
Alton,Ill.(6) L1 ..... 3.45
Atlanta A11 ..... 3.60
Buffalo R2 ..... 3.45
Cleveland R2 ..... 3.45
Emeryville,Calif. J7 .... 4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 ..... 4.10
Gary,Ind. C3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2, Y1 .. 3.45
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.05
Lackawanna,N.Y. B2 .. 3.45
LosAngeles B3 ..... 4.15
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 .... 4.25
Niles,Calif. P1 ..... 4.17
Pittsburgh,Calif. C11 .... 4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
SandSprings,Okla. S5 .. 4.35
Seattle,Wash. B3, N14 .. 4.20
SouthAvis,Pa. J8 ..... 3.45
So.Chicago,Ill. R2 ..... 3.45
So.Duquesne,Pa. C3 .... 3.45
So.SanFrancisco B3 .... 4.20
SparrowsPoint,Md. B2 .. 3.45
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 .... 4.15
Youngstown C3, R2 .... 3.45

BARS, Reinforcing
(Fabricated; to Consumers)
Huntington,W.Va. W7 .. 4.50
Johnstown, ¼-1" B2 ... 4.35
LosAngeles B3 ..... 5.00
Marion,O. P11 ..... 4.40
Seattle B3, N14 ..... 5.10
SouthAvis,Pa. J8 ..... 4.35
So.SanFrancisco B3 .... 5.00
SparrowsPt., ¼-1" B2 .. 4.35
Williamsport,Pa. S19 .. 4.35

SHEET, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 .. 3.35
Ashland,Ky.(8) A10 .... 3.35
Butler,Pa. A10 ..... 3.35
Cleveland J5, R2 ..... 3.35
Conshohocken,Pa. A3 .. 3.45
Detroit M1 ..... 4.15
Ecorse,Mich.(8) G5 .... 3.55
Fairfield,Ala. T2 ..... 3.35
Fontana,Calif. K1 ..... 4.25
Gary,Ind. C3 ..... 3.35
Ind.Harbor,Ind. I-2, Y1 .. 3.35
Irvin,Pa. C3 ..... 3.35
Lackawanna,N.Y. B2 .. 3.35
Munhall,Pa. C3 ..... 3.35
Pittsburg,Calif. C11 .... 4.05
Pittsburgh J5 ..... 3.35
Sharon,Pa. S3 ..... 3.50
So.Chicago,Ill. W14 .... 3.35
SparrowsPoint,Md. B2 .. 3.35
Steubenville,O. W10 .... 3.35
Torrance,Calif. C11 .... 4.05
Warren,O. R2 ..... 3.35
Weirton,W.Va. W6 .... 3.35
Youngstown C3, Y1 .... 3.35

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)
AlabamaCity,Ala. R2 .. 4.50
Dover,O. R1 ..... 4.65
Ind.Harbor,Ind. I-2 .... 4.40
Mansfield,O. E6 ..... 4.15
Niles,O. N12 ..... 4.10
Torrance,Calif. C11 .... 5.15

SHEETS, H-R (14 ga., heavier) High-Strength Low-Alloy
Cleveland J5, R2 ..... 5.05
Conshohocken,Pa. A3 .. 5.05
Ecorse,Mich. G5 ..... 5.25
Fairfield,Ala. T2 ..... 5.05
Fontana,Calif. K1 ..... 6.74
Gary,Ind. C3 ..... 5.05
Ind.Harbor,Ind. I-2, Y1 .. 5.05
Irvin,Pa. C3 ..... 5.05
Lackawanna(35) B2 ... 5.05
Pittsburgh J5 ..... 5.05
Sharon,Pa. S3 ..... 5.05
So.Chicago,Ill. C3 ..... 5.05
SparrowsPoint(36) B2 .. 5.05
Warren,O. R2 ..... 5.05
Weirton,W.Va. W6 .... 5.05
Youngstown, C3, Y1 ... 5.05

SHEETS, Cold-Rolled High-Strength Low-Alloy
Cleveland J5, R2 ..... 6.20
Ecorse,Mich. G5 ..... 6.40
Fontana,Calif. K1 ..... 7.05
Gary,Ind. C3 ..... 6.20
Ind.Harbor,Ind. I-2, Y1 .. 6.20
Irvin,Pa. C3 ..... 6.20
Lackawanna(37) B2 ... 6.20
Pittsburgh J5 ..... 6.20
SparrowsPoint(38) B2 .. 6.20
Warren,O. R2 ..... 6.20
Weirton,W.Va. W6 .... 6.20
Youngstown Y1 ..... 6.20

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.10
Cleveland J5, R2	4.10
Ecorse,Mich. G5	4.30
Fairfield,Ala. T2	4.10
Follansbee,W.Va. F4	5.10
Fontana,Calif. K1	5.00
Gary,Ind. C3	4.10
GraniteCity,Ill. G4	4.30
Ind.Harbor,Ind. I-2, Y1	4.10
Irvin,Pa. C3	4.10
Lackawanna,N.Y. B2	4.10
Middletown,O. A10	4.10
Pittsburg,Calif. C11	5.05
Pittsburgh J5	4.10
SparrowsPoint,Md. B2	4.10
Steubenville,O. W10	4.10
Warren,O. R2	4.10
Weirton,W.Va. W6	4.10
Youngstown Y1	4.10

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.40
Ashland,Ky.(8) A10	4.40
Canton,O. R2	4.40
Delphos,O. A16	*5.40*
Dover,O. R1	4.75
Fairfield,Ala. T2	4.40
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Kokomo,Ind. C16	4.50
MartinsFerry,O. W10	4.40
Niles,O. N12	4.65
Pittsburg,Calif. C11	5.15
SparrowsPoint,Md. B2	4.40
Steubenville,O. W10	4.40
Torrance,Calif. C11	5.15
Weirton,W.Va. W6	4.40

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3	6.75
SparrowsPoint(39) B2	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	4.95
Irvin,Pa. C3	4.95
Kokomo,Ind. C16	5.05
Niles,O. N12	5.20

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	4.65
Middletown,O. A10	4.65

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.25
Niles,O. R2 (28)	5.25
Weirton,W.Va. W6	5.10

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.05

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10	4.80
Gary,Ind. C3	4.80
Mansfield,O. E6	4.80
Middletown,O. A10	4.80
Niles,O. N12	4.80
Weirton,W.Va. W6	4.80

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.20

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3	$17.50
Yorkville,O. W10	17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$6.45
Gary,Ind. C3	6.35
Irvin,Pa. C3	6.35
SparrowsPoint,Md. B2	6.45
Yorkville,O. W10	6.35

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville,O. W10	$7.05

SHEETS, Mfg. Ternes, 8 lb

Gary,Ind. C3	$8.10
Warren,O. R2	8.10
Yorkville,O. W10	8.10

BLUED STOCK, 29 Ga.

Yorkville,O. W10	6.00

SHEETS, Culvert No. 16	**Cu Alloy**	**Cu Fe**
Ashland A10	5.20	...
Canton,O. R2	5.25	5.70
Fairfield,Ala. T2	5.20	5.45
Gary C3	5.20	5.45
IndianaHarbor I-2	5.20	5.45
Irvin,Pa. C3	5.20	5.45
Kokomo C16	5.40	...
MartinsFy,O. W10	5.20	5.45
Pittsburg,Cal. C11	5.95	...
SparrowsPt. B2	5.20	...
Torrance,Cal. C11	5.95	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10	5.45
Fairfield,Ala. T2	5.45

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland(8) A10	3.60
Cleveland R2	3.95
Ind.Harbor,Ind. I-2	3.60
Warren,O. R2	3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.70
Middletown,O. A10	4.60
Warren,O. R2	4.70

SHEETS, Galvanized Ingot Iron No. 10 Flat

Ashland,Ky.(8) A10	4.65
Canton,O. R2	5.15
Ind.Harbor,Ind. I-2	4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	4.90
Middletown,O. A10	4.90

SHEETS, Wrought Iron	**An'ld**	**Galv.**
Apollo,Pa. B14	12.00	15.50

SHEETS, Drum Body

Pittsburg,Calif. C11	4.05
Torrance,Calif. C11	4.05

SHEETS, ALUMINIZED

Butler,Pa. A10	7.75

TIN PLATE, Electrolytic (Base Box)	**0.25 lb**	**0.50 lb**	**0.75 lb**
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut Lengths ½c lower)	**Field**	**Arma-ture**	**Elec-tric**	**Motor**	**Dyna-mo**
BeechBottom W10 (cut lengths)	...	...	6.70	7.95	8.75
Brackenridge,Pa. A4	...	...	7.20	8.45	9.25
GraniteCity,Ill. G4(cut lengths)	...	...	6.90	8.15	...
Ind.Harbor,Ind. I-2	6.40	6.70	(34)	...	...
Mansfield,O. E6 (cut lengths)	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	6.20	6.70	...	...
Parkersburg F4 (cut lengths)	...	...	...	...	8.75
Vandergrift,Pa. C3	...	6.70	7.20	8.45	9.25
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	6.70	7.20	8.45	9.25

SHEETS, SILICON (22 Gage Base) Coils (Cut Lengths ½c lower) Transformer Grade	**72**	**65**	**58**	**52**
BeechBottom W10 (cut lengths)	9.30	9.85	10.55	11.35
Brackenridge,Pa. A4	9.80	10.35	11.05	....
Parkersburg F4 (cut lengths)	9.30	....	....	....
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	....	....	....
Zanesville,O. A10	9.80	10.35	11.05	11.85

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	**T-100**	**T-90**	**T-80**	**T-73**
Butler,Pa. A10 (C.R.)	....	....	14.20	14.70
Vandergrift,Pa. C3	12.35	13.20	14.20	14.70

TIN PLATE, American COKE (Base Box)	**1.25 lb**	**1.50 lb**
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2	7.40	7.60
Gary, C3	7.30	7.50
Ind.Harbor I-2, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$5.60
Fairfield,Ala. T2	5.70
Gary,Ind. C3	5.60
GraniteCity,Ill. G4	5.80
Ind.Harbor,Ind. I-2, Y1	5.60
Irvin,Pa. C3	5.60
Niles,O. R2	5.60
Pittsburg,Calif. C11	6.35
SparrowsPoint,Md. B2	5.70
Warren,O. R2	5.60
Weirton,W.Va. W6	5.60
Yorkville,O. W10	5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5	5.30
Follansbee,W.Va. F4	5.30
Gary,Ind. C3	5.30
GraniteCity,Ill. G4	5.50
Ind.Harbor,Ind. Y1	5.30
Irvin,Pa. C3	5.30
Niles,O. R2	5.30
SparrowsPoint,Md. B2	5.40
Warren,O. R2	5.30
Yorkville,O. W10	5.30

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.40
Cleveland R2	4.40
Ecorse,Mich. G5	4.70
Gary,Ind. C3	4.40
GraniteCity,Ill. G4	4.60
Ind.Harbor,Ind. I-2	4.40
Irvin,Pa. C3	4.40
Middletown,O. A10	4.40
Youngstown Y1	4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Atlanta(9) A11	5.10
Bessemer,Ala. T2	4.95
Conshohocken,Pa. A3	4.95
Ecorse,Mich. G5	5.15
Fairfield,Ala. T2	4.95
Fontana,Cal. K1	6.64
Gary,Ind. C3	4.95
Ind.Harb.,Ind. I-2, Y1	4.95
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	5.70
Sharon,Pa. S3	4.95
So.SanFrancisco(25) B3	5.70
SparrowsPoint,Md. B2	4.95
Warren,O. R2	4.95
Weirton,W.Va. W6	4.95
Youngstown C3, Y1	4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.10
Carnegie,Pa. S18	5.10
Fontana,Calif. K1	6.30
Gary,Ind. C3	5.10
Houston,Tex. S5	5.50
KansasCity,Mo. S5	5.70
NewBritn,Conn.(10) S15	5.10
Sharon,Pa. S3	5.10
Youngstown C3	5.10

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	3.50
Warren,O. R2	3.85

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.25
Alton,Ill.(1) L1	3.25
Ashland,Ky.(8) A10	3.25
Atlanta A11	3.40
Bessemer,Ala. T2	3.25
Bridgeprt,Conn.(10) S15	3.50
Buffalo(27) R2	3.25
Butler,Pa. A10	3.25
Carnegie,Pa. S18	3.50
Conshohocken,Pa. A3	3.35
Detroit M1	4.05
Ecorse,Mich. G5	3.45
Fairfield,Ala. T2	3.25
Fontana,Calif. K1	4.40
Gary,Ind. C3	3.25
Houston,Tex. S5	3.65
Ind.Harbor,Ind. I-2, Y1	3.25
KansasCity,Mo.(9) S5	3.85
Lackawanna,N.Y. B2	3.25
LosAngeles B3	4.00
Milton,Pa. B6	3.25
Minnequa,Colo. C10	4.30
NewBritain(10) S15	3.50
N.Tonawanda,N.Y. B11	3.25
Pittsburg,Calif. C11	4.00
Riverdale,Ill. A1	3.25
SanFrancisco S7	4.00
Seattle B3, N14	4.25
Sharon,Pa. S3	3.50
So.Chicago,Ill. W14	3.25
So.SanFrancisco B3	4.00
SparrowsPoint,Md. B2	3.25
Torrance,Calif. C11	4.00
Warren,O. R2	3.25
Weirton,W.Va. W6	3.25
WestLeechburg,Pa. A4	3.25
Youngstown C3, Y1	3.25

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15	9.50
Carnegie,Pa. S18	9.50
Cleveland A7	9.50
Dover,O. G6	9.50
Harrison,N.J. C18	9.50
NewBritn,Conn.(10) S15	9.50
Pawtucket,R.I.(11) N8	9.50
Pawtucket,R.I.(12) N8	9.80
Sharon,Pa. S3	9.50
Worcester,Mass. A7	9.80
Youngstown C8	9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	4.75

STRIP, Cold-Finished, Spring Steel (Annealed)	**0.26-0.40C**	**0.41-0.60C**	**0.61-0.80C**	**0.81-1.05C**	**1.06-1.35C**
Bridgeport,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
Bristol,Conn. W1	...	...	6.85	8.80	....
Carnegie,Pa. S18	...	5.95	6.55	8.50	10.80
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Dover,O. G6	4.15	5.95	6.55	8.50	10.80
FranklinPark,Ill. T6	4.40	6.10	6.70	8.65	....
Harrison,N.J. C18	...	...	6.85	8.80	11.10
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
NewCastle,Pa. B4	4.15	5.95	6.55	8.50	....
NewCastle,Pa. E5	4.50	5.95	6.55	8.50	10.80
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	4.70	5.95	6.55	8.50	10.80
Worcester,Base	4.65	6.25	6.85	8.80	11.10
Sharon,Pa. S3	4.50	5.95	6.55	8.50	10.80
Trenton,N.J. R5	...	6.25	6.85	8.80	11.10
Wallingford,Conn. W2	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.15	5.95	6.55	8.50	10.80
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.30	11.25	13.85
Harrison,N.J. C18	...	...	9.30	11.25	13.85

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	4.50
Berea,O. C7	4.60
Bridgeprt,Conn.(10) S15	4.50
Butler,Pa. A10	4.15
Cleveland A7, J5	4.15
Dearborn,Mich. D3	4.75
Detroit D2	4.75
Detroit M1	4.95
Dover,O.(40) G6	4.50
Ecorse,Mich. G5	4.35
Follansbee,W.Va. F4	4.50
Fontana,Calif. K1	5.40
FranklinPark,Ill. T6	4.30
Ind.Harbor,Ind. I-2	4.30
Lackawanna,N.Y. B2	4.15
LosAngeles C1	5.50
Mattapan,Mass. T6	5.00
Middletown,O. A10	4.15
NewBritain(10) S15	4.50
NewCastle,Pa. B4	4.50
NewCastle,Pa.(40) E5	4.50
NewHaven,Conn. D2	5.00
NewHaven,Conn. A7	4.65
NewYork W3	5.00
Pawtucket,R.I. R3	5.15
Pawtucket,R.I.(21) N8	5.00
Riverdale,Ill. A1	4.30
Rome,N.Y. R6	4.15
Sharon,Pa. S3	4.50
SparrowsPoint,Md. B2	4.15
Trenton,N.J.(13) R5	5.00
Wallingford,Conn. W2	5.00
Warren,O.(40) T5	4.50
Warren,O. R2	4.50
Weirton,W.Va. W6	4.15
Youngstown C8, (40)	4.50
Youngstown Y1	4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5	6.20
Dover,O. G6	6.20
Ecorse,Mich. G5	6.40
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.20
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.20
Weirton,W.Va. W6	6.20
Youngstown Y1	6.20

STRIP, Electro Galvanized

Weirton,W.Va. W6	4.15
Youngstown C8	4.15

Key to Producing Companies

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Bufffalo Bolt Co.
B14 A. M. Byers Co.
C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-Warner Corp.
C3 Carnegie-Illinois Steel
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve.Cold.Roll.MillsCo.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Son, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
B1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H4 Heppenstall Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K5 Kidd Drawn Steel Co.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.40
Riverdale,Ill. A1	3.40
Sharon,Pa. S3	3.65
Youngstown C3	3.40

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Fostoria,O. S1	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Milbury,Mass(12) N6	6.20
Monessen,Pa. P7, P16	5.90
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Struthers,O. Y1	5.90
Trenton,N.J. A7	6.20
Waukegan,Ill. A7	5.90
Williamsport,Pa. B2	6.00
Worcester A7,J4,T6,W12	6.20
Worcester,Mass. N6	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	5.35
Buffalo W12	5.35
Cleveland A7	5.35
Crawfordsville,Ind. MS	5.35
Dover,O. G6	5.35
Fostoria,O. S1	5.50
Kokomo,Ind. C16	5.35
FranklinPark,Ill. T6	5.70
Massillon,O. R8	5.35
Monessen,Pa. P7, P16	5.35
Pawtucket,R.I.(12) N8	6.00
Trenton,N.J. R5	5.65
Worcester A7, T6, W12	5.65

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.45
Buffalo W12	8.45
Chicago W13	8.45
Cleveland A7	8.45
Crawfordsville,Ind. MS	8.45
Fostoria,O. S1	8.45
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.45
Monessen,Pa. P16	8.45
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.45
Roebling,N.J. R5	8.75
Waukegan,Ill. A7	8.45
Worcester,Mass. A7,T6	8.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	10.55
Monessen,Pa. P16	10.80
Roebling,N.J. R5	10.80

WIRE, Manufacturers Bright, Low-Carbon

AlabamaCity,Ala. R2	4.50
Aliquippa,Pa. J5	4.50
Atlanta A11	4.60
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.50
Buffalo W12	4.50
Chicago W13	4.50
Cleveland A7, C20, R2	4.50
Crawfordsville,Ind. MS	4.60
Donora,Pa. A7	4.50
Duluth A7	4.50
Fairfield,Ala. T2	4.50
Fostoria,O.(24) S1	4.85
Houston S5	4.90
Johnstown,Pa. B2	4.50
Joliet,Ill. A7	4.50
KansasCity,Mo. S5	5.10
Kokomo,Ind. C16	4.60
LosAngeles B3	5.45
Minnequa,Colo. C10	4.75
Monessen,Pa. P7	4.50
Newark, 6-Sga. I-1	5.15
No.Tonawanda B11	4.50
Palmer,Mass. W12	4.80
Pittsburg,Calif. C11	5.45
Portsmouth,O. P12	4.50
Rankin,Pa. A7	4.50
So.Chicago,Ill. R2	4.50
So.SanFrancisco C10	5.45
SparrowsPoint,Md. B2	4.60
Sterling,Ill.(1) N15	4.50
Struthers,O. Y1	4.50
Torrance,Calif. C11	5.45
Waukegan,Ill. A7	4.50
Worcester, Mass. A7	4.80
Worcester,Mass. T6	4.95

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.55
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.55
Donora,Pa. A7	5.55
Duluth A7	5.55
Johnstown,Pa. B2	5.55
LosAngeles B3	6.50
Monessen,Pa. P7, P16	5.55
NewHaven,Conn. A7	5.85
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	6.50
Portsmouth,O. P12	5.55
Roebling,N.J. R5	5.85
So.Chicago,Ill. R2	5.55
SparrowsPoint,Md. B2	5.65
Struthers,O. Y1	5.55
Torrance,Calif. C11	6.50
Trenton,N.J. A7	5.85
Waukegan,Ill. A7	5.55
Worcester,Mass. A7	5.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	8.15
Monessen,Pa. P16	8.15
Roebling,N.J. R5	8.45
SparrowsPoint,Md. B2	8.25

ROPE WIRE

	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.05	8.05	8.30
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.05	8.05	8.30
Donora,Pa. A7	8.05	8.05	8.30
Fostoria,O. S1	8.05	8.05	8.30
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P7, P16	8.05	8.05	8.30
NewHaven,Conn. A7	8.35	8.35	8.60
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.05	8.05	8.30
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	8.35	8.35	8.60
Waukegan,Ill. A7	8.05	8.05	8.30
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

WIRE, Merchant Quality (6 to 8 gage)

	An'ld	Galv.
AlabamaCity R2	5.35	5.60
Aliquippa J5	5.35	5.60
Atlanta A11	5.45	5.70
Bartonville(19) K4	5.35	5.60
Buffalo(31) W12	4.50	...
Cleveland A7	5.35	5.60
Crawfordsvil. MS	5.45	5.70
Donora A7	5.35	5.60
Duluth A7	5.35	5.60
Fairfield T2	5.35	5.60
Houston,Tex. S5	5.75	6.00
Johnstown B2	5.35	5.60
Joliet,Ill. A7	5.35	5.60
KansasCy.Mo. S5	5.95	6.20
Kokomo C16	5.45	5.70
LosAngeles B3	6.30	...
Minnequa C10	5.60	5.85
Monessen P7	5.35	5.60
Palmer(31) W12	4.80	...
Pitts.,Cal. C11	6.30	6.55
Prtsmth.(18) P12	5.35	5.60
Rankin A7	5.35	5.60
So.Chicago R2	5.35	5.60
So.S.Fran. C10	6.30	6.55
SparrowsPt. B2	5.45	5.70
Sterling,Ill.(1)N15	5.35	5.60
Struthers,O. Y1	5.35	5.60
Torrance,Cal. C11	6.30	...
Worcester A7	5.65	5.90

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Aliquippa J5	9.80	11.30
Bartonville(1) K4	9.80	11.30
Cleveland A7	9.80	11.30
Crawfrdvil. MS	9.80	11.30
Fostoria,O. S1	9.90	11.40
Johnstown B2	9.80	11.30
Kokomo C16	9.80	11.30
Minnequa C10	10.05	11.80
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.15	11.65
Prtsmth.(18) P12	9.80	11.30
SparrowsPt. B2	9.90	11.40
Waukegan A7	9.80	11.30

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	128
Bartonville,Ill. K4	126
Crawfordsville MS	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Houston,Tex. S5	134
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
KansasCity,Mo. S5	138
Kokomo,Ind. C16	128
Minnequa,Colo. C10	131
Monessen,Pa. P7	126
Pittsburg,Calif. C11	146
Portsmouth,O.(18) P12	126
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
So.SanFran.,Calif. C10	146
SparrowsPoint, Md. B2	128
Sterling,Ill.(1) N15	126

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	116
Duluth A7	116
Franklin,Pa. F5	116
Huntington,W.Va. W7	116
Johnstown,Pa. B2	116
Joliet,Ill. A7	116
Marion,O. P11	116
Minnequa,Colo. C10	121
Moline,Ill. R2	112
So.Chicago R2	116
Williamsport,Pa. S19	120

WOVEN FENCE, 9-15½ Ga.

	Col.
AlabamaCity,Ala. R2	116
Ala.City,Ala.,17-18ga.R2	198
Aliquippa,Pa.9-14½ga.J5	116
Atlanta A11	118
Bartonville,Ill.(19) K4	116
Crawfordsville,Ind. MS	118
Donora,Pa. A7	116
Duluth A7	116
Houston,Tex. S5	124
Fairfield,Ala. T2	116
Johnstown,Pa. B2	116
Johnstn,17ga.6" B2	190
Johnstn,17ga.,4" B2	193
Joliet,Ill. A7	116
KansasCity, Mo. S5	128
Kokomo,Ind. C16	118
Minnequa,Colo. C10	121
Monessen,Pa. P7	116
Pittsburg,Calif. C11	139
Portsmouth,O.(18) P12	116
Rankin,Pa. A7	116
So.Chicago,Ill. R2	116
Sterling,Ill. N15	116

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	113
Atlanta A11	114
Bartonville,Ill.(19) K4	113
Chicago W13	113
Crawfordsville MS	115
Donora,Pa. A7	113
Duluth A7	113
Fairfield,Ala. T2	113
Joliet,Ill. A7	113
KansasCity,Mo. S5	125
Kokomo,Ind. C16	115
Minnequa,Colo. C10	118
Pittsburg,Calif. C11	137
So.Chicago,Ill. R2	113
So.SanFran.,Calif. C10	137
SparrowsPoint,Md. B2	115
Sterling,Ill.(1) N15	113

AXLES

Fairfield,Ala. T2	5.25
Ind.Harbor,Ind. S13	5.25
Johnstown,Pa. B2	5.25

JOINT BARS

Bessemer,Pa. C3	4.40
Fairfield,Ala. T2	4.40
Ind.Harbor,Ind. I-2	4.40
Joliet,Ill. C3	4.40
Lackawanna,N.Y. B2	4.40
Minnequa,Colo. C10	4.40
Steelton,Pa. B2	4.40

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	5.60
KansasCity,Mo. S5	5.85
Lebanon,Pa. B2	5.60
Minnequa,Colo. C10	5.60
Pittsburgh J5	5.60
Seattle B3	6.10
So.Chicago,Ill. R2	5.60
Struthers,O. Y1	5.60
Youngstown R2	5.60

RAILS

	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	3.40	3.30	3.35	3.75
Ensley,Ala. T2	3.40	3.30	...	3.75
Fairfield,Ala. T2	...	...	...	3.75
Gary,Ind. C3	3.40	3.30	3.35	...
Huntington,W.Va. W7	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2	...	...	...	(16)3.75
Lackawanna B2	3.40	3.30	...	3.75
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	3.40	3.30	...	...
Williamsport,Pa. S19	...	...	...	3.75

NAILS & STAPLES, Stock To Dealers & Mfrs. (7)

	Col.
AlabamaCity,Ala. R2	106
Aliquippa,Pa. J5	106
Atlanta A11	108
Bartonville,Ill.(19) K4	106
Chicago,Ill. W13	106
Cleveland A9	111
Crawfordsville,Ind. MS	108
Donora,Pa. A7	106
Duluth A7	106
Fairfield,Ala. T2	106
Galveston,Tex. D7	114
Houston,Tex. S5	114
Johnstown,Pa. B2	106
Joliet,Ill. A7	106
KansasCity,Mo. S5	118
Kokomo,Ind. C16	108
Minnequa,Colo. C10	111
Monessen,Pa. P7	106
Pittsburg,Calif. C11	125
Portsmouth,O. P12	106
Rankin,Pa. A7	106
So.Chicago,Ill. R2	106
SparrowsPoint,Md. B2	108
Sterling,Ill.(1) N15	106
Torrance, Calif. C11	126
Worcester, Mass. A7	112

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	5.35
Bartonville,Ill.(19) K4	5.35
Crawfordsville,Ind. MS	5.45
Donora,Pa. A7	5.35
Duluth A7	5.35
Johnstown,Pa. B2	5.35
Joliet,Ill. A7	5.35
Kokomo,Ind. C16	5.45
Minnequa,Colo. C10	5.60
Pittsburg,Calif. C11	6.30
Portsmouth,O. P12	5.35
Rankin,Pa. A7	5.35
So.Chicago,Ill. R2	5.35
SparrowsPoint,Md. B2	5.45
Worcester,Mass. A7	5.65

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$6.75
Wheeling,W.Va. W10	6.75

TIE PLATES

Fairfield,Ala. T2	4.20
Gary,Ind. C3	4.20
Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	4.20
Minnequa,Colo. C10	4.20
Pittsburg,Calif. C11	4.35
Pittsburgh R2	4.20
Seattle B3	4.35
Steelton,Pa. B2	4.20
Torrance,Calif. C11	4.35
Weirton,W.Va. W6	4.20

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	9.10
Lebanon,Pa.(32) B2	8.85
Minnequa,Colo. C10	8.85
Pittsburgh O3, P14	9.10
Seattle B3	9.35

Key to Producing Companies

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 New Eng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron&Steel Corp.
O4 Oregon Steel Mills
P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P 17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div.,EatonMfg.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.

T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstown Sheet&Tube

TOOL STEEL

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	21.00	18W,4Cr,3V	126.00
Extra Carbon	24.50	18W,4Cr,2V,9Co	185.50
Spec. Carbon	29.50-31.50	18W,4Cr,2V,6Co	169.50
Oil Hardening	32.00	18.25W,4.25Cr,1V,4.75Co	156.50
Cr Hot Wrk.	32.00	20.25W,4.25Cr,1.6V,12.25Co	293.50
Hi-Carbon-Cr	57.50	1.5W,4Cr,1V,8.5Mo	71.50
18W,4Cr,1V	100.00	6.4W,4.5Cr,1.9V,5Mo	76.50
18W,4Cr,2V	113.00	6W,4Cr,3V,6Mo	97.00

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M14, S8, T7, U4, V2, V3

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant. (4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pittsburgh base.
(12) Worcester, Mass. base.
(13) 3" & wider; over ⅛" to under 3" 5.50c.
(14) Also wide flange beams.
(15) ⅛" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pittsburgh base.
(20) Deduct 0.25c for untreated.
(21) New Haven, Conn. base
(22) Del. San Fran. Bay area.
(23) Angles 1"x1" to 1¼"x1¼" only.
(24) Deduct 0.35c for finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill shipments; to consumers, 4.93c.
(27) Bar mill sizes.
(28) Bonderized.
(31) Not annealed.
(32) Untreated.
(33) To jobbers, deduct 20 cents.
(34) 6.70c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 Ga. & lighter; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 4.75c. 0.035" and heavier.

STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % —Black— A	B	C	—Galvanized— D	E	F
⅛	5.5c	0.24	36.5	34.5	33.5	5.5	3.5	5.5
¼	6.0	0.42	33.5	31.5	30.5	5.5	3.5	6.5
⅜	6.00	0.57	29.0	27.0	26.0	0.5	+1.5	2.5
½	8.5	0.85	40.5	38.5	39.5	21.0	19.0	20.0
¾	11.5	1.13	43.5	41.5	42.5	25.0	23.0	24.0
1	17.0	1.68	46.0	44.0	45.0	28.0	26.0	27.0
1¼	23.0	2.28	46.5	44.5	45.5	28.5	26.5	27.5
1½	27.5	2.73	47.0	45.0	46.0	29.0	27.0	28.0
2	37.0	3.68	47.5	45.5	46.5	29.5	27.5	28.5
2½	58.5	5.82	48.0	46.0	47.0	30.0	28.0	29.0
3	76.5	7.62	48.0	46.0	47.0	30.0	28.0	29.0

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ¼", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 points lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N3; Youngstown, plus 43% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y-1; Alton, Ill. (Lorain, O., base) L1.

Column D: Etna, Pa. N2; Monaca, Pa. quotes 1 pt lower on ½" through 3", P9; Sharon, Pa. M6, quotes 1 pt lower on ¼", 1 pt higher on ⅜" and 1 pt lower on ½" through 3"; Butler, Pa., ⅛" through ⅜", F6; Benwood, W. Va., W10 except 3½ pts lower on ⅛", 2½ pts lower on ¼", 3 pts lower on ⅜" Wheatland, Pa., except 2 pts lower on ⅛", ¼" and ⅜" W9. Following make ½" and larger: Lorain, N3; Youngstown, plus 24.5% on 3½" and 4", R2; Youngstown, Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 8 pts lower on ½" and larger continuous weld and 15.5% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	36.0	17.5	36.0	17.5
2½	58.5	5.82	39.0	20.5	39.0	20.5
3	76.5	7.62	39.0	20.5	39.0	20.5
3½	92.0	9.20	41.0	22.5	41.0	22.5
4	$1.09	10.89	41.0	22.5	41.0	22.5
5	1.48	14.81	41.0	22.5	41.0	22.5
6	1.92	19.18	41.0	22.5	41.0	22.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5; Lorain, N3; Youngstown, Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Ga.	—Seamless— H.R.	C.D.	Elec. Weld H.R.	C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.63	17.05	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.03	22.27	26.22
2½	12	25.29	29.76	24.53	28.87
2¾	12	27.71	32.58	26.88	31.60
2⅞	12	29.36	34.53	28.48	33.49
3	12	30.82	36.27	29.90	35.18
3¼	11	35.87	42.22	34.79	40.95
3½	11	38.52	45.35	37.36	43.99
4	10	47.82	56.25	46.39	54.56
4½	9	63.37	74.59	61.47	72.35
5	9	73.37	86.32	71.17	83.73
6	7	112.62	132.51	....	....

Boiler tube producers include Babcock & Wilcox Tube Co., National Tube Co., Globe Steel Tubes Co., Pittsburgh Steel Co., Republic Steel Corp., Standard Tube Co.

CLAD STEELS

(Cents per pound)

Cladding Stainless	—Plates— Carbon Base 10%	20%	—Strip— Cold-Rolled Carbon Base 10% Both Sides	—Sheets— Carbon Base 10%	20%	Copper Base Both Sides
302	....	....	....	19.75	21.50–22.50	75.00
304	22.50	26.50	....	20.75	22.50–24.00	77.00
305	....	....	....	....	....	79.00
309	28.00	32.00	....	....	....	....
310	34.00	38.00	....	....	....	105.00
316	27.00	31.00	....	26.00	28.00–32.00	....
317	32.00	36.00	....	....	....	....
318	31.00	35.00	....	....	....	....
321	24.00	28.00	....	23.00	25.00	90.00
347	25.00	29.00	....	24.00	26.00–30.00	94.00
405	18.75	24.75	....	....	....	....
410	18.25	24.25	....	....	....	....
430	18.25	24.25	....	....	....	....
Nickel	31.00	41.00	31.50 41.00	....	....	88.00
Inconel	39.00	51.00	....	....	....	140.00
Monel	32.00	42.00	26.50 33.50	....	....	83.00
Copper*	....	....	20.70† 25.65‡	....	....	....

* Deoxidized. † 17.20c for hot-rolled. ‡ 22.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16 and Coatesville L7; nickel, inconel, monel-clad plates, Coatesville L7; nickel, monel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:
- ½-in. & smaller diam.. 27
- ⅝-in. & ⅝-in. 29
- ¾-in. and larger 26

Longer than 6 in.:
- All diams. 22

Lag bolts, all diams.:
- 6 in. and shorter 30
- over 6 in. long 28

Ribbed Necked Carriage. 26
Blank 40
Plow 40
Step, Elevator, Tap, and Sleigh Shoe 28
Tire bolts 20
Boiler & Fitting-Up bolts 37

NUTS

H.P. & C.P. Reg. & Heavy Square:
- ½-in. and smaller 25
- ⅝-in. & ⅝-in. 23
- ¾-in.-1½-in. 23
- 1⅝ in. and larger 16

H.P. Hex.:	Reg.	Heavy
½-in. & smaller	33	29
⅝-in. & ⅝-in..	28	25
¾-in.-1½-in. ..	25	23
1⅝ in. & larger	17	16

C.P. Hex.:		
½-in. & smaller	33	29
⅝-in. & ⅝-in..	30	27
¾-in. & 1½ in.	27	24
1⅝ in. & larger	20	17

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

½-in. and smaller	Hvy.	Reg.	Lght.
	35	41	41
⅝-in. & ⅝-in.	30	36	36
¾-in.-1½ in..	27	31	33
1⅝-in.&larger	17	21	..

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish ..... 63.5 & 10
Plated finishes ... 50 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
- ¼-in. through ⅝-in. .. 50
- ¾-in. through 1 in. ... 43

Longer than 6 in.:
- ¼-in. through ⅝-in. .. 33
- ¾-in. through 1 in. .. 13

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam. x 6 in. and shorter 46
1 in. and smaller diam. x over 6 in. 33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller 41
¼-in. diam. & larger 24
N.F. thread, all diams. . 18

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.25c
⅞-in., under .....43 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers .....Net to $1 off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches— Diam.	Length	Cents per lb
17,18,20	60,72	16.00
8 to 16	48,60,72	16.50
7	48,60	17.75
6	48,60	19.00
4, 5⅛	40	19.50
3	40	20.50
2½	24,30	21.00
2	24,30	23.00

CARBON

40	100,110	7.50
35	100,110	7.50
30	84,110	7.50
24	72 to 104	7.50
17 to 20	34,90	7.50
14	60,72	8.00
10,12	60	8.25

STAINLESS STEEL

(Cents per pound)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	39.00	32.00	30.00
302...	39.00	34.00	30.00
303...	41.00	38.00	32.50
304...	41.00	36.00	31.50
309...	53.50	52..0	43.00
316...	54.50	56.50	47.50
321...	47.00	46.00	35.50
347...	51.50	50.00	40.00
410...	34.50	28.50	24.50
416...	35.00	35.00	25.00
420...	42.00	45.00	30.00
430...	37.00	29.00	25.00
501...	25.50	24.00	13.00
502...	26.50	25.00	14.00

Baltimore, Types 301 through 347 sheet, except 309 E2.
Baltimore, bars wire and structurals A10.
Brackenridge, Pa., sheets A4.
Bridgeville, Pa., bars, wire, sheets & strip U4*.
Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.
Carnegie, Pa., strip except Types 303, 501, 502 S18*.
Cleveland, strip A7.
Detroit, strip, except Types 303, 309, 321, 416, 420, 501 and 502 M1.
Dunkirk,N.Y., bars, wire A4.
Duquesne, Pa., bars C3.
Fort Wayne, Ind., bars and wire, except Types 501 and 502 J6.
Gary, Ind., sheets except Type 416 C3.
Harrison, N. J., strip C18.
Harrison, N. J., Types 302, 304, 316 wire and strip D6*.
Massillon, all products R2.
McKeesport, Pa., bars; sheets except Type 416 C3.
McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.
Middletown, O., sheets except Types 303, 416, 420, 501 and 502 A10.
Midland, sheets & Strip C18.
Munhall, Pa., bars C3.
Pittsburgh, sheets C18.
Reading, Pa., bars & strip except Type 309 bars quoted 41.00c C4*.
So. Chicago, Ill., bars & structurals C3.
Syracuse, N. Y., bars, wire & structurals C18.
Titusville, Pa., bars U4*.
Wallingford, Conn., strip, except 309, W2 quotes 0.25 cents higher.
Washington, Pa., bars, sheets & strip J3.
Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 58.00c, strip 60.00c W4*.
Watervliet, N. Y., structurals & bars A4.
Waukegan, bars & wire A7.
West Leechburg, Pa., strip, A4.
Youngstown, strip C8*.

* Quotes 1.50 cents lower.

COAL, CHEMICALS

Spot, cents per gallon, ovens
Pure benzol 25.00
Tuluol, one deg...18.25-25.75
Industrial xylol ..19.75-27.50
Per ton bulk, ovens
Sulphate of ammonia .$32-45
Cents per pound, ovens
Phenol, 40 (carlots, returnable drums) 13.50
Do., less than carlots..14.25
Do., tank cars 12.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $37; less than 60%, $34.
Imported, net ton, duty paid, metallurgical grade, $39-40.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

	Cents
Sponge Iron:	
98+% Fe, carlots	15.00
Swedish, c.i.f. New York, in bags ...7	8.50
Electrolytic Iron:	
Annealed, 99.5% Fe	39.50
Unannealed, 99+% Fe	33.50
Unannealed 99+% Fe (minus 325 mesh)	48.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns..70.00-135.00	
Aluminum:	
Carlots, freight allowed	27.00
Atomized, 500 lb drums, freight allowed	30.00
Brass, 10-ton lots..28.25-30.25	
Copper:	
Electrolytic	31.75
Reduced	31.50
Lead	18.50
Manganese:	
Minus 100-mesh 52.00-55.00	
Minus 35 mesh	49.00
Minus 200 mesh	56.00
Nickel unannealed	66.00
Nickel-Silver, 10-ton lots	41.75
Silicon	34.00
Solder (plus cost of metal)	8.50
Stainless Steel, 302	75.00
Tin	88.50
Zinc, 10-ton lots..20.50-28.00	
	Dollars
Tungsten:	
99%, minus 80 to 200 mesh, freight allowed.	
over 1000 lb	2.90
1000 lb	2.95
less than 1000 lb.	3.00
98.8%, minus 65 mesh, freight allowed.	
1000 lb and over..	2.90
less than 1000 lb	3.00
Molybdenum:	
99%, minus 80 to 200 mesh	
over 500 lb	2.25
200 to 500 lb	2.60
less than 200 lb	2.75
82-88%, freight allowed	
2000 lb and over..	2.40
less than 2000 lb..	2.45
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll.fur. .$14.00-14.50
Connellsvll.fdry. .15.00-16.00
New River, foundry..19.00
Wise county, foundry..15.95
Wise county, furnace..15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens .$22.00
Everett, Mass., ovens
New England, del.‡ 23.40
Chicago, ovens 21.00
Chicago del. .....‡22.45
Detroit, del. 24.91
Terre Haute, ovens ...21.20
Milwaukee, ovens 21.75
Indianapolis, ovens ...20.75
Chicago, del. 24.12
Cincinnati, del. 23.67
Detroit, del. 24.65
Ironton, O., ovens ...20.40
Cincinnati, del. 22.71
Painesville, O., ovens .21.90
Buffalo, del. 24.02
Cleveland, del. 23.62
Erie, del. 22.05
Birmingham, ovens 19.15
Birmingham, del. 20.20
Philadelphia, ovens ...21.25
Neville Island,Pa.,ovens 21.00
Swedeland, Pa., ovens..21.20
Portsmouth, O., ovens..20.15
Cincinnati, del. 22.71
Detroit, ovens 21.65
Detroit, del. 22.65
Buffalo, del. 24.69
Flint, del. 24.09
Pontiac, del. 23.04
Saginaw, del. 24.40

‡ Includes representative switching charge of: *, $1.05; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York(city)	5.75	6.84	7.40	6.04	...	5.95	6.64	8.60	5.85	6.10	7.54
New York(c'try)	5.55	6.64	7.20	5.84	...	5.75	6.44	8.40	5.65	5.90	7.34
Boston (city) ..	5.95	6.75	7.37	5.90	...	5.80	6.39	8.70	5.95	6.28	7.48
Boston (c'try) .	5.75	6.55	7.17	5.70	...	5.60	6.19	8.50	5.75	6.08	7.28
Phila. (city) ..	6.60-6.70	6.75	7.10	5.90	...	5.85	6.46	8.40	5.70	5.90	7.00
Phila. (c'try)..	6.35-6.45	6.50	6.85	5.65	...	5.60	6.21	8.15	5.45	5.65	6.75
Balt. (city) ...	5.35	6.59	6.66	5.79	...	5.79	6.39	...	5.89	5.60	7.24
Balt. (c'try) ..	5.15	6.39	6.46	5.59	...	5.59	6.19	...	5.69	5.40	7.04
Norfolk, Va. ..	6.10	...	...	6.30	...	6.15	7.20	...	6.20	6.15	7.55
Richmond, Va..	5.35	...	6.90	5.63	...	5.53	6.30	...	5.63	5.45	7.13
Wash. (w'hse).	5.56	6.80	6.73	6.00	...	6.00	6.62	...	6.10	5.81	7.45
Buffalo (del.)..	5.35	6.15	7.10	5.61	...	5.35	5.95	10.10††[5]	5.55	5.85	7.15
Buffalo (w'hse).	5.15	5.95	6.90	5.41	...	5.15	5.75	9.90††[5]	5.35	5.65	6.95
Pitts. (w'hse)..	5.15	5.95*	6.60-6.70	5.20	6.15	5.10	5.75	9.55††	5.25	5.35	6.60
Detroit (w'hse).	5.33	6.08*	7.09	5.49	...	5.39	5.91	9.86††[5]	5.64	5.79	6.88
Cleveland (del.)	5.35	6.15	7.30	5.44	6.35	5.32	5.95	8.31	5.57	5.72	6.92
Cleve. (w'hse).	5.15	5.95	7.10	5.24	6.15	5.12	5.75	8.16	5.37	5.52	6.72
Cincin. (city)..	5.57	6.14	6.54	5.50	...	5.50	6.11	...	5.79	5.94	7.10
Chicago (city) .	5.35	6.15	7.05	5.30	...	5.30	5.85	9.75††[5]	5.45	5.60	6.80
Chicago (w'hse)	5.15	5.95	6.85	5.10	...	5.10	5.65	9.55††[5]	5.25	5.40	6.60
Milwaukee(city)	5.49	6.29	6.94	5.44	...	5.44	6.09	9.89††[5]	5.59	5.74	6.94
Milwau. (c'try)	5.29	6.09	7.14	5.24	...	5.24	5.89	9.69††[5]	5.39	5.54	6.74
St. Louis (del.)	5.68	6.48	7.28	5.63	...	5.63	6.28	10.08††[5]	5.78	5.93	7.13
St. L. (w'hse).	5.48	6.28	7.08	5.43	...	5.43	6.08	9.88††[5]	5.58	5.73	6.93
Kans. City(city)	5.95	6.75	7.60	5.90	...	5.90	6.55	...	6.05	6.20	7.60
KansCity(w'hse)	5.75	6.55	7.40	5.70	...	5.70	6.35	...	5.85	6.00	7.40
Omaha, Nebr. .	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Birm'ham (del.)	5.30	6.10	6.30[2]	5.25	...	5.25	6.88	...	5.40	5.55	7.83
Birm'hm(w'hse)	5.15	5.95	6.15[2]	5.10	...	5.10	...	...	5.25	5.40	...
Los Ang. (city)	6.10	7.65	7.80	6.15	8.55	6.10	7.75	...	6.10	6.20	8.40
L. A. (w'hse)..	5.90	7.45	7.60	5.95	8.35	5.90	7.55	...	5.90	6.00	8.20
San Francisco .	6.50[9]	7.60[3]	7.50[2]	7.45[9]	8.25[3]	6.30[9]	7.55	...	6.30[9]	6.40[9]	8.50[9]
Seattle-Tacoma .	6.60	8.15[3]	...	6.85	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [5]—1000 to 1999 lb; [7]—300 to 999 lb; [9]—400 to 9999 lb.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., $106. Hard-fired, $142 at above points.

High-Heat Duty: Salina, Pa. $91; Woodbridge, N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $86.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $80.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., $72; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., Chester, W. Va., New Cumberland, W. Va., $60.

Wire Cut: Chester, W. Va., Wellsville, O., New Cumberland, W. Va., $58.

MALLEABLE BUNG BRICK

St. Louis, Mo., Olive Hill, Ky., $96; Ottawa, Ill., $90; Beach Creek, Pa., $86.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $86; Hays, Pa., $91; Joliet or Rockdale, Ill., E. Chicago, Ind., $95; Lehi, Utah, Los Angeles, $101.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $84.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $85.

BASIC BRICK

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $66; chemical-bonded chrome brick, $69; magnesite brick, $91; chemical-bonded magnesite, $80.

MAGNESITE

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, 3/8" grains; bulk, $33; single paper bags, $38.

DOLOMITE

(Base prices per net ton)

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Narlo, Millersville, Martin, Gibsonburg, Woodville, O., $12.25; Thornton, Melrook, Ill., $12.35; Dolly Siding, Bonne Terre, Mo., $12.45.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports. After Jan. 25, 1950, increases or decreases, if any, in upper lake rail freight, dock handling charges and taxes thereon are for buyer's account.

Old range bessemer	$8.10
Old range nonbessemer	7.95
Mesabi bessemer	7.85
Mesabi nonbessemer	7.70
High phosphorus	7.70

EASTERN LOCAL ORE

Cents per unit, del. E. Pa.

Foundry and basic 56.62% concentrates contract	16.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Wolframite, scheelites, net ton unit, duty paid	$21.50-$22.50

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00

South African Transvaal

44% no ratio	$17.00-18.00
45% no ratio	17.30-18.30
48% no ratio	26.00
50% no ratio	27.00-27.50

Brazilian

44% 2.5:1 lump	$32.00

Rhodesian

45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00

Domestic—rail nearest seller

48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb. molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton, $65, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $172 per gross ton of alloy, cl., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces; $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 35.5c; ton lot 31.25c, less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese, Electrolytic: Less than 250 lb, 35c; 250 lb to 1999 lb, 32c; 2000 to 39,999 lb, 30c; 40,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr, c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered. Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

(*Please turn to page* 148)

Tin, Lead Prices Jump

Activity in all metal markets stimulated by war-created fears of shortages

New York—Fighting in Korea has jolted all metal markets. In tin, prices have advanced rapidly to the highest levels since November; in lead, a ½-cent advance was posted July 12 and another ½-cent on July 13. Undertone of the zinc market strengthened, but prices held unchanged. Proponents of suspension of the copper duty have an added strong argument for quick congressional action.

Tin Prices Soar—Straits spot tin crossed the 90-cent level for the first time since Nov. 16, 1949, and traders believe the rise is likely to continue. The advance in the market here was paced by the strong Singapore and London markets. Advices from the Far East report that heavy buying by Americans for stockpiling is behind the rise of Singapore tin to new record price levels. These advices say that Russia also has been increasing its demand for Malayan tin. The United Kingdom has been stepping up its stockpiling of tin in recent weeks. Consumers here are attempting to replenish their working stocks and reserves to levels justified by prospective high rate of operations and a threatened contraction in world supplies.

The Reconstruction Finance Corp., Washington, has reached a tentative agreement with Bolivia for purchase of around half of its tin output. Officials stressed that the agreement being drafted into contract form must be ratified by the RFC directors and the Bolivian tin interests before a contract can be signed. The negotiations, long under way since the previous contract expired Dec. 31, were spurred by the outbreak of hostilities in Korea.

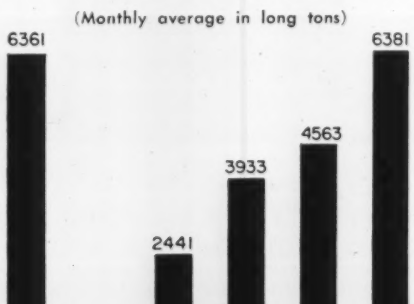
Lead Sales Gain—Strength in the lead market reflects relatively low consumer inventories and a spurt in buying for July and August delivery. The current price level of 11.80c was in effect from May 11 to June 22, or just prior to the recent period of weakness. Producers' inventories are comparatively high, but they would be reduced rapidly in a full war economy. Imports are heavy, having amounted to around 50,000 tons in April.

Zinc Stocks Drop—While no change has been posted in zinc, undertone of the market is strong. Demand is active; supplies are tight. Stocks dropped to only 26,665 tons on June 30 from 41,819 tons at the end of May and compared with 82,919 tons a year ago. During June, 22,284 tons went into government stockpile while 68,214 tons were delivered to domestic consumers. Production was off slightly at 75,766 tons compared with 79,645 tons in May. Unfilled orders on smelters' books at the end of June amounted to 63,701 tons.

Copper Supplies Tight—Demand for copper exceeds supplies, but, temporarily at least, prices remain unchanged. Approval by the House Ways and Means Committee of a one year's suspension of the 2-cent copper tariff, retroactive to July 1, may be having a restraining influence on prices. However, there are no definite indications yet as to what action Congress may take on the committee's recommendation. Testimony before the committee has brought out the fact that the government has decided to accelerate its stockpiling of copper. It is believed that before the speed-up the Munitions Board had been buying 15,000 to 20,000 tons a month, and that purchases now may move up into the range of 20,000 to 25,000 tons a month.

Straits Tin Shipments

. . . back to prewar volume



Platinum Supplies Tighten

New York — Advance of $8 an ounce in the price of platinum to $74 an ounce for bulk quantities and $77 for retail lots is the first change recorded since Feb. 1 when the market eased $3 an ounce. The price of iridium has increased about $61.50 a troy ounce to $161.50 an ounce. The price of 10 per cent iridio-platinum is now quoted $78.25, up $6.25.

Strength in the platinum market is attributed to tightness in supplies and the fear of scarcity as a result of the Korean war. During World War II, platinum was virtually unobtainable for civilian purposes since it is a strategic material used in important chemical processes. Supplies of iridium are far below demands from the electrical and aircraft parts industries.

Sales of platinum to domestic consumers by refiners and dealers amounted to about 51,400 ounces in the first quarter compared with 46,600 ounces in the preceding quarter while exports amounted to 1844 ounces against 3056, making the combined total in the first quarter the largest since the first quarter of 1948 and about 7 per cent greater than in the fourth quarter of 1949. The deficit in domestic refining of platinum was met partly by imports of 19,211 ounces of refined metal and partly by withdrawals from stocks of refiners and dealers. Receipts of 1469 ounces of platinum from Russia in the first quarter were the first since May, 1947. Canada accounted for 9120 ounces of the first quarter's imports.

Offers Rolled Copper Anodes

Matawan, N. J. — Hanson - Van Winkle-Munning Co., this city, is fabricating rolled copper anodes at its Anderson, Ind., plant. Shipments can be made from stock in any reasonable quantity and size anode.

Nickel Demand Tops Supply

New York — International Nickel Co. has adopted a policy of allocating sales of nickel to its customers. The rationing program was forced by a sharp rise in demand which is running well above the company's productive capacity. Sales in the last three months have been 25 per cent above the rate in 1948, the best previous postwar year and more than double the pace in 1939 and the record prewar year.

Wide World

BANDIT COUNTRY: Malaya, which before the war accounted for one-third of the world's supply of tin, has a lot of trouble with bandits. Although production is still good, bandit interference makes tin mining a difficult and hazardous operation. The United States, world's biggest opener of tin cans, gets a good deal of its tin from Malaya. Here, a dredge operates in a man-made lake where some tin deposits are located

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 22.50c, Conn. Valley; Lake 22.62½c, Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 22.00c; 88-10-2 (No. 215) 29.00c; 80-10-10 (No. 305) 22.50c; No. 1 yellow (No. 405) 19.00c.

Zinc: Prime western 15.00c; brass special 15.25c; intermediate 15.50c, East St. Louis; high grade 16.10c, delivered.

Lead: Common 11.80c; chemical 11.90c; corroding 11.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.50c, pigs 16.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 18.25-18.75c; No. 12 foundry alloy (No. 2 grade) 17.75-18.00c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.75c; grade 2, 18.00c; grade 3, 17.25c; grade 4, 16.75c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over, 21.50c, f.o.b. Freeport, Tex.

Tin: Grade A, spot and July 90.00c del

Antimony: American 99-99.8% and over but not meeting specifications below 24.50c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 25.00c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%: Chinese and Yugoslavian, 22.00c; English and Belgian, prompt, 23.00c, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 48.00c; 25-lb pigs, 50.50c; "XX" nickel shot, 51.50c; "F" nickel shot or ingots, for addition to cast iron, 48.50c. Prices include import duty.

Mercury: Open market, spot, New York $70-$73 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $24.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, $2.15 del.; special or patented shapes, $2.30.

Cobalt: 97-99%, $1.80 per lb for 550 lb (keg); $1.80 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 72.75c per oz.

Platinum: $74-$77 per ounce.

Palladium: $24 per troy ounce.

Iridium: $160 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill; based on 22.50-cent copper.)

Sheet: Copper 37.43; yellow brass 34.19; commercial bronze, 95%, 37.38; 90%, 36.93; red brass, 85% 35.96; 80%, 35.52; best quality, 35.04; nickel silver, 18%, 48.39; phosphor-bronze, grade A, 5% 55.11.

Rods: Copper, hot-rolled 33.28; cold-drawn 34.53; yellow brass free cutting, 28.54; commercial bronze, 95% 37.07; 90% 36.62; red brass 85% 35.65; 80% 35.21.

Seamless Tubing: Copper 37.47; yellow brass 37.20; commercial bronze 90% 39.59; red brass 85% 38.87; 80% 38.43.

Wire: Yellow brass 34.48; commercial bronze, 95% 37.67; 90% 37.22; red brass, 85% 36.25; 80% 35.81; best quality brass 35.33.

Copper Wire: Bare, soft, f.o.b. eastern mills, c.l. 26.67, l.c.l. 27.17, 100,000 lb lots 26.545; weatherproof, f.o.b. eastern mills, c.l. 28.10, l.c.l. 28.60, 100,000 lb lots 27.85; magnet, del., 15,000 lb or more 32.50, l.c.l. 33.25.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	27.4	...	...
0.135-0.096	12-48	27.9	...	...
0.095-0.077	12-48	28.4	26.5	30.1
0.076-0.061	12-48	29.0	26.7	30.3
0.060-0.048	12-48	29.2	26.9	30.6
0.047-0.038	12-48	29.6	27.1	30.9
0.037-0.030	12-48	30.0	27.5	31.4
0.029-0.024	12-48	30.4	27.8	31.8
0.023-0.019	12-36	31.0	28.2	32.3
0.018-0.017	12-36	31.6	28.8	33.1
0.016-0.015	12-36	32.3	29.4	34.0
0.014	12-24	33.2	30.2	35.1
0.013-0.012	12-24	34.1	30.9	36.0
0.011	12-24	35.1	31.8	37.2
0.010-0.0095	12-24	36.1	32.8	38.5
0.009-0.0085	12-24	37.3	33.9	40.0
0.008-0.0075	12-24	38.6	35.1	41.6
0.007	12-18	40.0	36.4	43.4
0.006	12-18	41.5	37.7	47.5

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	——Hexagonal—— 17S-T4
0.125	48.5	....	....
0.156-0.203	41.5	....	....
0.219-0.313	38.5	....	....
0.344	37.5	....	47.5
0.375	37.0	46.0	44.5
0.406	37.0	....	....
0.438	37.0	46.0	44.5
0.469	37.0	....	....
0.500	37.0	46.0	44.5
0.531	37.0	....	....
0.563	37.0	....	42.0
0.594	37.0	....	....
0.625	37.0	43.5	42.0
0.656	37.0	....	....
0.688	37.0	....	42.0
0.750-1.000	36.0	41.0	39.5
1.063	36.0	....	38.0
1.125-1.500	35.0	39.5	38.0
1.563	35.0	....	37.0
1.625	34.0	....	37.0
1.688-2.000	34.0	....	....
2.125-2.500	33.0	....	....
2.625-3.375	32.0	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, $17.00 per cwt; add 50c cwt, 10 sq ft to 140 sq ft. Pipe: Full coils, $17.00 per cwt. Traps and bends: List prices plus 45%.

ZINC

Sheets, 20.75c, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 20.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 19.00c; over 12-in., 20.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 69.00c. Strip, cold-rolled, 75.00c. Rods and shapes, 65.00c. Plates, 67.00c. Seamless tubes, 98.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 53.00c. Strip, cold-rolled, 56.00c. Rods and shapes, 51.00c. Plates, 52.00c. Seamless tubes, 86.00c. Shot and blocks, 46.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.31 in. in diameter, less than 25 lb. 55.00-57.50c; 25 to 99 lb. 45.00-47.50c; 100 lb to 5000 lb, 37.50-38.00c.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 25.50c; 5 tons and over 26.00c; 1 to 5 tons, 26.50c; less than 1 ton 27.00c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 34.09c; oval 33.59c; cast 32.12c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 51.40c, under 1000 lb 49.40c, f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,000 lb, 17.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 200 lb, 28.00c; over 200 lb, 27.00c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 65.00c; 10,000 to 30,000 lb, 63.00c; 3000 to 10,000 lb, 67.00c; 500 to 3000 lb, 68.00c; 100 to 500 lb, 70.00c; under 100 lb, 73.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 29.50c; 400-lb bbl. 27.50c up to 10,000 lb, 27.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over, nom.; 500 to 999 lb, nom.; 200 to 499 lb, nom.; less than 200 lb, nom.; ball, 1000 lb and over, nom.; 500 to 999 lb, nom; 200 to 499 lb, nom.; less than 200 lb, nom.; f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers nom.; 100 or 300 lb drums only, 100 to 500 lb, nom.; 600 to 1900 lb, nom.; 2000 to 9900 lb, nom.; f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 44.6c, 10 or more drums 42.6c, f.o.b. Niagara Falls, N. Y.; 45.85c and 43.85c, respectively, del. Cleveland or Philadelphia.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb nom.; more than 2000 lb, nom., f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, nom.; 100 lb kegs nom., f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Heavy Clean	Ends Rod	Turnings Clean
Copper	19.50	19.50	18.75
Yellow Brass	16.75	16.50	15.50
Commercial Bronze			
95%	18.50	18.25	17.75
90%	18.375	18.125	17.625
Red brass			
85%	18.125	17.875	17.375
80%	17.875	17.625	17.125
Best Quality(71-80%)	17.50	17.25	....
Muntz metal	15.75	15.50	15.00
Nickel, silver, 10%	19.12½	18.87½	9.56¼
Phos. bronze, A	19.75	19.50	18.50
Naval brass	16.12½	15.87½	15.37½
Manganese bronze	16.12½	15.87½	15.25

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 19.50; No. 2 copper 18.50; light copper 17.50; composition red brass 16.00; radiators 13.00; heavy yellow brass 12.00.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 19.50; No.2 copper 18.50; light copper 17.50; refinery brass (60% copper) per dry copper content 17.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 17.75-18.00; No. 2 16.50-16.75; light copper 15.50-15.75; No. 1 composition red brass 14.25-14.50; No. 1 composition turnings 13.75-14.00; mixed brass turnings 8.75-9.00; new brass clippings 15.00-15.25; No. 1 brass rod turnings 13.25-13.50; light brass 8.75-9.00; heavy yellow brass 10.00-10.25; new brass rod ends 13.50-13.75; auto radiators, unsweated 11.00-11.25; cocks and faucets, 12.75-13.00; brass pipe 13.00-13.25.

Lead: Heavy 8.75; battery plates 4.50; linotype and stereotype 10.75; electrotype 9.00; mixed babbitt 9.00.

Zinc: Old zinc 8.00-8.25; new die cast scrap 8.25-8.50; old die cast scrap 5.50-5.75.

Tin: No. 1 pewter 42.00; block tin pipe 63.00; No. 1 babbitt 32.00.

Aluminum: Clippings 2S 11.50-12.00; old sheets 8.50-9.00; crankcase 8.50-9.00; borings and turnings 5.50.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
July 13-14	22.50	11.80	15.00	90.00	17.50	24.50	48.00	72.75
July 12	22.50	11.30	15.00	87.25	17.50	24.50	48.00	72.75
July 11	22.50	10.80	15.00	84.75	17.50	24.50	48.00	72.75
July 10	22.50	10.80	15.00	82.75	17.50	24.50	48.00	72.75
July 7-8	22.50	10.80	15.00	81.375	17.50	24.50	48.00	72.75
July 6	22.50	10.80	15.00	80.50	17.50	24.50	48.00	72.75
July 5	22.50	10.80	15.00	79.75	17.50	24.50	48.00	72.75
July 3	22.50	10.80	15.00	79.25	17.50	24.50	48.00	72.75
July 1	22.50	10.80	15.00	78.75	17.50	24.50	48.00	72.75
June Avg.	22.231	11.608	14.769	77.668	17.50	24.50	48.00	72.75
June 30	22.50	10.80	15.00	78.75	17.50	24.50	48.00	72.75
June 28-29	22.50	10.80	15.00	78.25	17.50	24.50	48.00	72.75
June 27	22.50	11.30	15.00	78.25	17.50	24.50	48.00	72.75
June 26	22.50	11.30	15.00	77.50	17.50	24.50	48.00	72.75
June 23-24	22.50	11.30	15.00	76.375	17.50	24.50	48.00	72.75

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

IRON AND STEEL SCRAP

Consumer prices, except as otherwise noted, including brokers' commissions, as reported to STEEL, July 13, 1950; gross tons except as noted. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

July 13	$36.75
July 6	36.83
June 1950	39.25
July 1949	19.21
July 1945	19.17

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	$40.00
No. 2 Heavy Melt.	35.00
No. 1 Busheling	40.00
No. 1 Bundles	40.00
No. 2 Bundles	32.00-33.00
Heavy Turnings	36.00-37.00
Machine Shop Turnings	30.00-31.00†
Mixed Borings, Turnings	30.00-31.00†
Short Shovel Turnings.	33.50-34.50
Cast Iron Borings	31.00-32.00
Low Phos. Steel	43.00-44.00

Cast Iron Grades

No. 1 Cupola Cast	37.00-38.00
No. 1 Machinery Cast.	43.00-43.50
Charging Box Cast	41.00-41.50
Heavy Breakable Cast	36.50-37.50

Railroad Scrap*

No. 1 R.R. Heavy Melt.	*42.50*
Rails, Random Lengths	40.00-41.00
Rails, 2 ft. and under	*45.00*
Rails, 18 in. and under	42.50-43.50
Railroad Specialties	*46.00*
Axles	*42.00*
Angles, Splice Bars	*45.00*

* Brokers' offering prices.
† Crushers' buying prices.

CLEVELAND

No. 1 Heavy Melt. Steel	*$38.00-39.00*
No. 2 Heavy Melt. Steel	*33.00-34.00*
No. 1 Busheling	*38.00-39.00*
No. 1 Bundles	*38.00-39.00*
No. 2 Bundles	*29.00-30.00*
Machine Shop Turnings	*24.00-25.00*
Mixed Borings, Turnings	*27.00-28.00*
Short Shovel Turnings	*27.00-28.00*
Cast Iron Borings	*27.00-28.00*
Low Phos.	*40.00-40.50*

Cast Iron Grades

No. 1 Cupola	*45.00-46.00*
Charging Box Cast	*41.00-42.00*
Stove Plate	*40.00-41.00*
Heavy Breakable Cast	*38.00-39.00*
Unstripped Motor Blocks	*31.00-32.00*
Brake Shoes	*33.00-34.00*
Clean Auto Cast	*45.00-46.00*
No. 1 Wheels	*41.00-42.00*
Burnt Cast	*35.00-36.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*43.00-44.00*
R.R. Malleable	49.00-50.00
Rails, 3 ft and under	49.00-50.00
Rails, 18 in. and under	50.00-51.00
Rails, Random Lengths	48.00-49.00
Cast Steel	41.50-42.00
Railroad Specialties	42.50-43.00
Uncut Tires	49.00-50.00
Angles, Splice Bars	50.00-50.50

VALLEY

No. 1 Heavy Melt. Steel	*$40.50-41.00*
No. 2 Heavy Melt. Steel	*35.50-36.00*
No. 1 Bundles	*40.50-41.00*
No. 2 Bundles	*31.50-32.00*
Machine Shop Turnings	28.00-28.50
Short Shovel Turnings.	30.50-31.00
Cast Iron Borings	30.50-31.00
Low Phos.	43.50-44.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*43.00-44.00*

PHILADELPHIA

No. 1 Heavy Melt. Steel	$33.00
No. 2 Heavy Melt. Steel	31.00
No. 1 Busheling	32.00
No. 1 Bundles	33.00
No. 2 Bundles	27.00-27.50
Machine Shop Turnings	23.00-24.00
Short Shovel Turnings.	25.00-26.00
Mixed Borings, Turnings	22.00-23.00
Low Phos. Punchings and Plate, elec. fur. grade	38.00*
Low Phos. Plate, 5 ft & Under	38.00*
Elec. Furnace Bundles.	34.00*
Heavy Turnings	33.00*
No. 1 Chemical Borings	34.00
Knuckles and couplers	*42.00-43.00*
Steel car wheels	*42.00-43.00*

Cast Iron Grades

No. 1 Cupola Cast	36.00
No. 1 Machinery Cast.	39.00-40.00
No. 1 Yard Cast	34.00-35.00
Charging Box Cast	*34.50-35.00*
Heavy Breakable Cast	*34.50-35.00*
Unstripped Motor Blocks	29.00
Clean Auto Cast	39.00-40.00
No. 1 Wheels	41.00-42.00
Malleable	*43.00**

*Nominal.

CINCINNATI

No. 1 Heavy Melt. Steel	$37.00
No. 2 Heavy Melt. Steel	31.00
No. 1 Busheling	37.00
No. 1 Bundles	37.00
No. 2 Black Bundles.	30.00
No. 3 Bundles	26.00
Machine Shop Turnings	21.00
Short Shovel Turnings	24.00
Mixed Borings, Turnings	23.00
Cast Iron Borings	24.00

Cast Iron Grades

No. 1 Cupola Cast	47.00
Charging Box Cast	36.00
Stove Plate	33.00
Heavy Breakable Cast.	36.00
Unstripped Motor Blocks	29.00
Brake Shoes	26.00
Clean Auto Cast	47.00
Drop Broken Cast	49.00
Low Phos., 18 in. and under	47.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	40.00
R.R. Malleable	44.00
Rails, Rerolling	44.00
Rails, Random Lengths	41.00
Rails, 18 in. and under	50.00

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	*$26.50-27.50*
No. 1 Bundles	*37.00-38.00*
No. 2 Bundles	*23.00-24.00*
No. 1 Busheling	*34.00-35.00*
Machine Shop Turnings	22.50-23.00
Forge Flashings	*33.50-34.50*
Short Shovel Turnings	*23.50-24.50*
Cast Iron Borings	*23.50-24.50*
Punchings & Plate Scrap	*34.00-35.00*

Cast Iron Grades

No. 1 Cupola Cast	39.00-40.00
Heavy Breakable Cast	*32.00-33.00*
Clean Auto Cast	43.00-44.00

BUFFALO

No. 1 Heavy Melt. Steel	*$36.50-37.00*
No. 2 Heavy Melt. Steel	*33.00-33.50*
No. 1 Busheling	*33.00-33.50*
No. 1 Bundles	*34.00-34.50*
No. 2 Bundles	*31.00-31.50*
Machine Shop Turnings	*27.00-28.00*
Mixed Borings, Turnings	*27.00-28.00*
Cast Iron Borings	*27.00-28.00*
Short Shovelings	*29.00-30.00*
Low Phos.	*38.50-39.00*

Cast Iron Grades

No. 1 Cupola	35.50-36.00
No. 1 Machinery	38.50-39.00
Malleable	32.50-33.00

Railroad Scrap

Rails, 2 ft. and under.	46.50-47.00
Rails, random size	40.50-41.00

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	$29.00-30.00
No. 2 Heavy Melt. Steel	26.00-27.00
No. 1 Busheling	27.00-28.00
No. 1 Bundles	29.00-30.00
No. 2 Bundles	*25.00-25.50*
Machine Shop Turnings	17.00-18.00
Mixed Borings, Turnings	17.00-18.00
Short Shovel Turnings.	20.00-20.50
Punchings & Plate Scrap	30.00-31.00
Low Phos. Plate, 5 ft & under	30.00-31.00
Elec. Furnace Bundles.	30.00-31.00

Cast Iron Grades

No. 1 Cupola Cast	29.00-29.50
No. 1 Machinery	30.00-31.00
Charging Box Cast	28.50-29.50
Heavy Breakable	28.50-29.50
Unstripped Motor Blocks	21.00-22.00

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	$28.50-29.00
No. 2 Heavy Melt. Steel	23.50-24.50
No. 1 Bundles	28.50-29.50
No. 1 Busheling	28.00-28.50
Machine Shop Turnings	19.00
Mixed Borings, Turnings	17.50-18.00
Short Shovel Turnings.	22.00-23.00
Bar Crops and Plate.	30.50-31.50
Punchings & Plate Scrap	30.50-31.50
Chemical Borings	21.00-21.50

Cast Iron Grades

No. 1 Cupola Cast	30.00-31.00
Mixed Cast	28.00-29.00
Heavy Breakable Cast.	31.00-32.00
Stove Plate	26.50-27.00

CHICAGO

No. 1 Heavy Melt. Steel	*$37.00-37.50*
No. 2 Heavy Melt. Steel	*35.00-35.50*
No. 1 Bundles	36.00-37.00
No. 2 Bundles	*29.00-30.00*
Machine Shop Turnings	*24.00-25.00*
Mixed Borings, Turnings	*24.00-25.00*
Short Shovel Turnings	*26.00-27.00*
Cast Iron Borings	27.00-28.00
Low Phos.	39.00-40.00
Elec. Furnace Bundles	*39.00-40.00*
Heavy Turnings	29.00-30.00
Cut Structurals	38.00-39.00

Cast Iron Grades

No. 1 Cupola Cast	44.00-45.00
Clean Auto Cast	44.00-45.00
No. 1 Wheels	38.00-39.00
Stove Plate	*36.00-37.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*39.00-40.00*
Malleable	44.00-45.00
Rails, Rerolling	*48.00-49.00*
Rails, Random Lengths	41.00-42.00
Rails, 2 ft and under.	45.00-46.00
Rails, 18 in. and under	46.00-47.00
Railroad Specialties	*42.00-43.00*
Angles, Splice Bars	*44.00-45.00*

BIRMINGHAM

No. 1 Heavy Melt. Steel	$31.00-32.00
No. 2 Heavy Melt. Steel	29.00-30.00
No. 1 Busheling	29.00-30.00
No. 2 Bundles	27.00-28.00
Machine Shop Turnings	25.00-26.00
Mixed Borings, Turnings	26.00
Short Shovel Turnings.	27.00-28.00
Cast Iron Borings	24.00-25.00
Bar Crops and Plate.	37.00-38.00
Cut Structurals	36.00-37.00

Cast Iron Grades

No. 1 Cupola Cast	38.00-39.00
Stove Plate	33.00-34.00
No. 1 Wheels	33.00-34.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	35.00
R.R. Malleable	nominal
Rails, Rerolling	44.00-45.00
Rails, 2 ft and under.	nominal
Angles and Splice Bars	40.00-41.00

ST. LOUIS

No. 1 Heavy Melt. Steel	$36.00-[illegible]
No. 2 Heavy Melt. Steel	32.00-[illegible]
No. 1 Bundles	36.00-[illegible]
No. 2 Bundles	32.00-[illegible]
No. 3 Bundles	27.00-[illegible]
Machine Shop Turnings	19.00-[illegible]
Short Shovel Turnings.	23.00-24.00

Cast Iron Grades

No. 1 Cupola Cast	39.00-[illegible]
Charging Box Cast	*35.00-37.00*
Heavy Breakable Cast.	35.00-[illegible]
Brake Shoes	37.00-38.00
Clean Auto Cast	40.00-42.00
Burnt Cast	35.00-36.00

Railroad Scrap

R.R. Malleable	41.00-42.00
Rails, Rerolling	48.00-50.00
Rails, Random Lengths	39.00-41.00
Rails, 3 ft and under.	45.00-46.00
Uncut Tires	38.00-39.00
Angles, Splice Bars	43.00-44.00
Railroad Specialties	41.00-42.00

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$22.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Bundles	18.00
No. 2 Bundles	17.00
No. 3 Bundles	15.00
Machine Shop Turnings	9.00

Cast Iron Grades

No. 1 Cupola Cast	34.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Rails, Random Lengths	22.00

SEATTLE

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	20.00
No. 1 Busheling	17.50
Nos. 1 & 2 Bundles	18.00
No. 3 Bundles	16.00
Machine Shop Turnings	13.00
Mixed Borings, Turnings	13.00
Punchings & Plate Scrap	27.50-30.00
Cut Structurals	27.50-30.00

Cast Iron Grades

No. 1 Cupola Cast	27.50-30.00
Heavy Breakable Cast.	27.50
Stove Plate	25.00
Unstripped Motor Blocks	25.00
Malleable	27.50
Brake Shoes	25.00
Clean Auto Cast	30.00
No. 1 Wheels	30.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	21.00
Railroad Malleable	27.50
Rails, Random Lengths	21.00
Angles and Splice Bars	21.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$22.00
No. 2 Heavy Melt. Steel	20.00
Nos. 1 & 2 Bundles	16.00
No. 3 Bundles	13.00
Machine Shop Turnings	7.50
Mixed Borings, Turnings	5.00
Punchings & Plate Scrap	30.50

Cast Iron Grades

No. 1 Cupola Cast	38.00-39.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	22.00
Rails, Rerolling	33.00

HAMILTON, ONT.

(Delivered prices)

Heavy Melt.	$30.00
No. 1 Bundles	30.00
Mechanical Bundles	28.00
Mixed Steel Scrap	28.00
Mixed Borings, Turnings	23.00
Rails, Remelting	30.00
Rails, Rerolling	33.00
Busheling	24.50
Bushelings new factory, prep'd	28.00
Bushelings new factory, unprep'd	23.00
Short Steel Turnings	23.00

Cast Iron Grades

Cast	40.00-43.00*

* F.o.b. shipping point.

Sheets, Strip . . .

Heavy carryover into fourth quarter leaves little capacity available for new tonnage

Sheet and Strip Prices, Page 127 & 128

Philadelphia—While not having opened books for fourth quarter on major products, sheet sellers generally will have little, if any, capacity available for new tonnage before November because of the heavy carryovers from the third quarter. Some producers have definitely blanked out October and say they may have to blank out an additional couple of weeks or so in order to become current on commitments. Suspensions for repairs and improvements are contributing to the stringency. A hot mill at Lackawanna is scheduled to go down for the month of August for power improvements. Budd Co.'s plant at 2450 Huntington Park Ave., this city, was struck last week by a walkout of 9000 auto workers. However, the company took in steel shipments at other points for storage. Operations at the Lester plant of Westinghouse were paralyzed by a strike of 7000 electrical workers and two local plants of the Electric Storage Battery Co. by a walkout of 2200 workers at the Westinghouse plant the week before. The strike had been on since June 27. Some workers, it is said, were permitted by the union to do some critical work for the Navy.

New York — At least one large sheet producer is expected momentarily to announce allocations for October. In view of an anticipated carryover, the amount of new tonnage involved should be small. This interest will continue on a monthly allocation basis throughout the remainder of the year. Sheet sellers generally, however, have taken no action, despite a continuing accumulation of orders, many of which will undoubtedly be returned or else filled only in part, depending upon relationships of the consumers with the mills. It will be, as in the recent past, exceedingly difficult for a buyer to place tonnage with a mill with which it has had no established connection. Most sheet sellers claim they have never seen demand heavier than at present, despite the fact various fabricating shops are shut down for vacations and in some instances down to the extent where they are not even able to take in tonnage were it to be delivered.

Pittsburgh — Demand for carbon sheet and strip continues relentlessly. Practically all of the pressure is from producers of civilian goods. New orders for war materiel requiring sheet and strip have not come into the picture yet; old orders for routine materiel for the armed services account for only a minor amount of light, flat-rolled tonnage.

Sheet and strip producers who can convert production facilities to output of light plate are wondering whether they will have to make such a conversion to help supply plate for railroad freight cars now that the Korean war situation has heightened the carriers' interest in cars.

Cincinnati—Demand for sheets is

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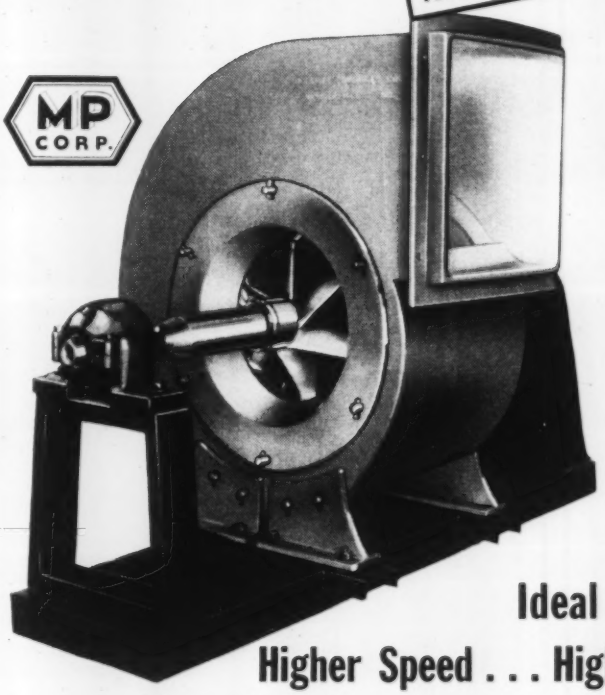

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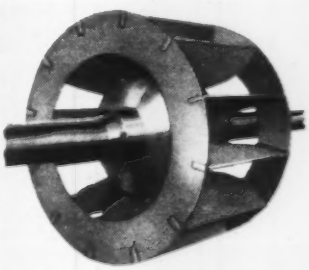

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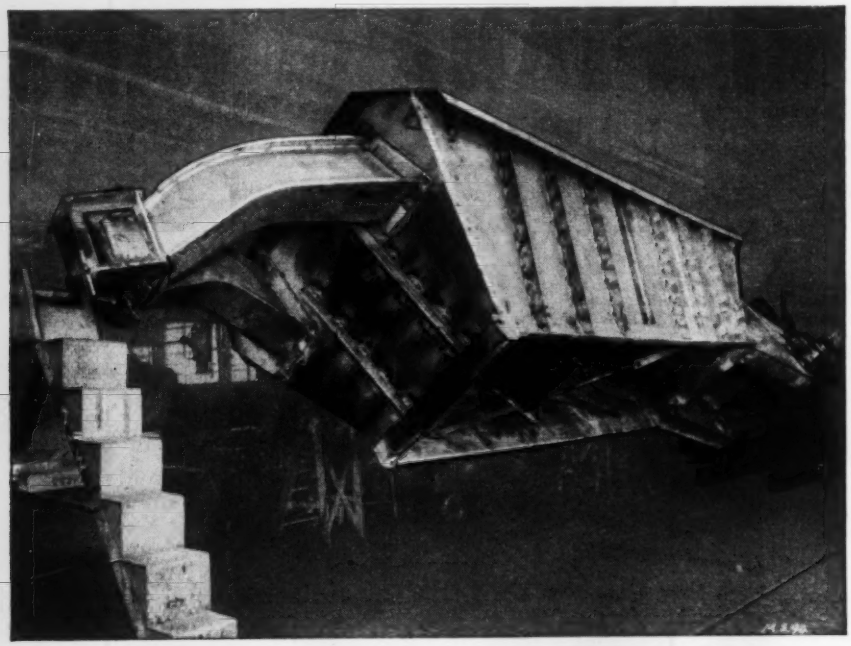

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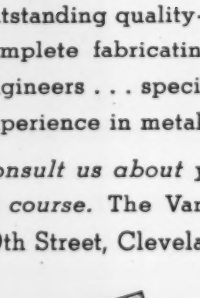

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as broad and as heavy as ever, with unceasing pressure on mills for more tonnage. Carryover from second quarter will be cleared up in a week or so, but size of quarterly allotments continues disappointing to fabricators. The fighting in Korea is not yet reflected directly.

Chicago — Sheet and stripmakers will not be able to satisfy demand during third and fourth quarters. It is a foregone conclusion that customers will be faced with gearing their manufacturing operations to the reduced shipments. Household appliance makers observe no letup in demand for their products. Inventories are fairly large, but so long as demand holds disposition is to push off production cutbacks.

It is estimated that production of television tubes for months ahead will account for 1000 tons of stainless steel monthly.

St. Louis—Sheet demand continues to get stronger. Outside inquiries, particularly from the automaking industry, are mounting. Complaints of black market gouging attempts are frequently heard. One Iowan, a St. Louis customer, said fabricators in his section are being offered large sheet tonnages at 14.00c a pound. Although mill operations remain at capacity, there will be substantial carryovers into the fourth quarter. Fourth-quarter books may be opened next week. Galvanized sheet quotations recently went up slightly under an automatic extra charge system to compensate for higher zinc prices.

Los Angeles — Deliveries of flat-rolled steel on quota from eastern producers are extended by 60 to 90 days and allocations are reduced. Pinched between lengthening deliveries and smaller quantities of flat-rolled, fabricators are turning actively to the gray market for stop-gap purchases. Prices are 12 to 13 cents per pound for cold-rolled sheet.

San Francisco — War fears have made fabricators more frantic than ever in attempts to find flat-rolled products. Supplies show no signs of increasing and the situation remains critical.

Tubular Goods . . .

Tubular Goods Prices, Page 130

Seattle—Inquiry for cast iron pipe is more active, 650 tons or more pending in bids at Portland, Oreg., and Everett, Wash. Mill deliveries are slow, sometimes uncertain, but agencies are moving considerable pipe in small lots out of stock.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 127

San Francisco—Volume of reinforcing bar orders is heavier. Consumers are buying some tonnages for inventory on war fears.

Seattle — Several fair-sized tonnages of reinforcing bars were booked last week and a continued strong inquiry for small lots is reported. Plants have fair backlogs and third quarter activity is expected to equal that of the second quarter. War threats have not affected the market in this area, but, should need arise, production can be materially increased.

Plates . . .

Supply tightens as carbuilders' requirements increase. Fourth quarter orders booked

Plate Prices, Page 127

Pittsburgh—Inquiries for plate for railroad freight cars have stepped up noticeably since the Korean war heightened carriers' interest in car procurement. One carbuilder's inquiry is for eight to ten times the tonnage he is now getting.

With steel production at or above capacity, producers could fill the increased demands for plate only by taking tonnage away from other consumers. Demand for plate falls on relatively few companies since some producers have practically withdrawn from plate production.

Because demand for plates far exceeds supply, buyers are looking far afield for tonnage. A New Orleans barge builder, for instance, unable to get all the plates he wanted from the South, has sought plates at Pittsburgh.

New York—Despite vacation suspensions at various consuming plants, plate demand continues to expand. Meanwhile, most sellers have not opened books for fourth quarter and are simply filing new orders for possible acceptance later. They are expanding the policy of accepting business from their regular customers only; this is true especially where plates of light gage are being sought. One eastern mill resumed rolling after a ten-day suspension for vacations, with remaining vacation time to be worked out on a stagger system; another is expected to be down for at least three weeks in August for vacations and repairs. All other plate mills apparently are planning to take vacations on a stagger basis.

N. W. Kellogg Co., Jersey City, N. J., received a contract from the Standard Oil Co. of California for what is considered to be the world's largest vacuum flashing unit. It will be able to charge 55,000 barrels of reduced crude a day.

Philadelphia—Plate mills are completely sold out for the quarter on heavy as well as light gage material. Some mills are now accepting tonnage for October, although it is obvious there will be a carryover from the current quarter which will have to be worked off that month. There appears to be more than enough tonnage in sight to keep producers active over the remainder of this year.

Los Angeles—Plate deliveries are extended as much as 120 days. With inventories of plate slim, fabricators are turning to warehouses in increasing numbers for enough steel to keep work in process going.

Steel Bars . . .

Bar Prices, Page 127

New York—Some hot bar sellers have opened their books for fourth quarter, and have practically sold out, especially on the smaller sizes. If they so desired, they could sell out completely. However, they are confining sales to regular customers and in most instances are not giving

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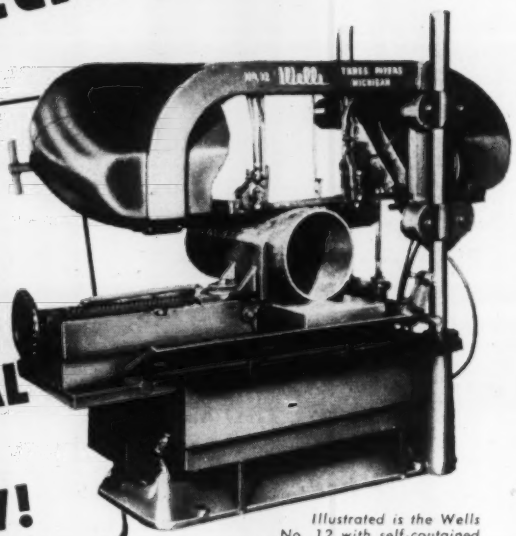

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Maximum Cutting	12¾" deep; 16" wide
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WEIGHT, Approximate	1750 lbs.

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them as much as requested. Other sellers may open books shortly. Actually, some do not know precisely where they stand. Most, if not all, are still behind on promises. Alloy bar supply is in fair balance with demand. Most sellers can make shipments within six or seven weeks.

Los Angeles—With pressure from consumers steadily mounting, mill schedules for bars are tightening. Widely varying rolling rates and capacities of district bar mill facilities cause an extreme range in deliveries of 30 to 120 days.

San Francisco—Demand for bars is increasing. A spurt in orders followed outbreak of Korean fighting. Supplies of bars have been relatively plentiful, but, if buying continues to expand, a tighter situation is foreseen.

Automakers Scramble for Steel

Detroit—Pressure on steel suppliers from Detroit-area consumers, principally the automotive industry, last week was pushing up the safety valve. Large users like Ford and General Motors were making renewed efforts to reinforce forward buying of bars, sheet and strip, particularly cold-drawn bars and stainless strip. Obvious reasons were two-fold: Prospects of continued high-level sales of passenger cars and trucks over the rest of the year, stimulated by advanced ordering because of war scares; and determination by manufacturers to get as favorable a position on mill books as possible in the event of possible future allocations of tonnage.

Spot checks of car dealers showed daily order influx for new cars multiplied two, three, four and even more times. Cadillac already reportedly has a backlog of 50,000 orders, and is building a record rate of 11,000 units monthly.

One of the smaller cold-drawn bar suppliers in the Detroit district declared demand has never been as intense, and expected to break all production records over the coming months. However, no orders from military sources have been received beyond routine requests for limited poundage.

Admittedly the steel situation is being influenced to a considerable degree by sentiment colored by daily reports from Korea, still it remains basically strong, unlikely to waver no matter what the turn of events in Asia.

Structural Shapes . . .

Structural Shape Prices, Page 127

Philadelphia—Within the last week the remainder of shapes for delivery in this quarter were sold. Shapes were the last product to be cleaned up. One leading producer indicates that shapes will be allocated on a month-to-month basis. Books are opened for the next quarter. Fabricating shops are confronted with swelling demand and with requests to speed up schedules where possible on work already under contract. Fabricated prices are stiffening as a result.

Pittsburgh—Structural shapes are in relatively lighter demand than that

for other major steel products, although one producer is booked ahead as far as it cares to take orders. While order books can be filled up it takes a little longer to do it on structurals than on other major products.

Denver—Bidding $822,284.76, f.o.b. Pittsburgh, American Bridge Co. is low on double-circuit steel towers, Missouri Basin project, Souris district division, Wilton, N. Dak., Bureau of Reclamation, Denver. Bethlehem Steel Co. quoted $846,424.75, f.o.b. Leetsdale, Pa.

Seattle—Fabricating plants report a good run of small tonnages for industrial plants and schools, construction in the latter category being especially active. Public works also are taking a large volume of structural shapes.

Wire . . .

Wire Prices, Page 129

San Francisco—Wire rope demand, which has been dormant for several months, has shown a sudden pick-up.

Stainless Steel . . .

Stainless Steel Prices, Page 130

Pittsburgh—Crucible Steel Co. of America followed action of several other companies and increased the price of stainless steel to compensate for the recent boost in the price of nickel. Effective on shipments on and after July 7, Crucible's base prices on all stainless grades including Types 501 and 502 were raised 1.25 cents a pound on hot-rolled strip and 1.5 cents on all other products. Plate prices did not change.

With demand for stainless at a high level, one producer is turning down as many orders as it is accepting. Effect that International Nickel Co.'s rationing of nickel will have on stainless steel production is not clear yet. Producers hope the rationing will be only temporary. To augment their nickel supplies, stainless producers are buying nickel scrap and nickel-bearing scrap from which to recover nickel.

Cleveland — Republic Steel Corp. increased prices of various forms of stainless steel 1 cent to 1.50 cents per pound on an average, effective July 11. Similar action had been taken previously by several other producers. Price of stainless steel was not altered late last year by Republic at the time of a general price increase on basic steel. Since that time, there have been substantial increases in steelmaking costs, the company said. Among them has been a considerable increase in the cost of nickel and other elements required in the production of stainless steels.

Washington, Pa.—Jessop Steel Co. increased prices on stainless steel products, effective July 11. The increases are 1 cent on rerolling billets, blooms and slabs and tube rounds; 1.25 cents on hot-rolled strip; and on all other products, including forging billets, 1.50 cents a pound, except plates and castings which are unchanged.

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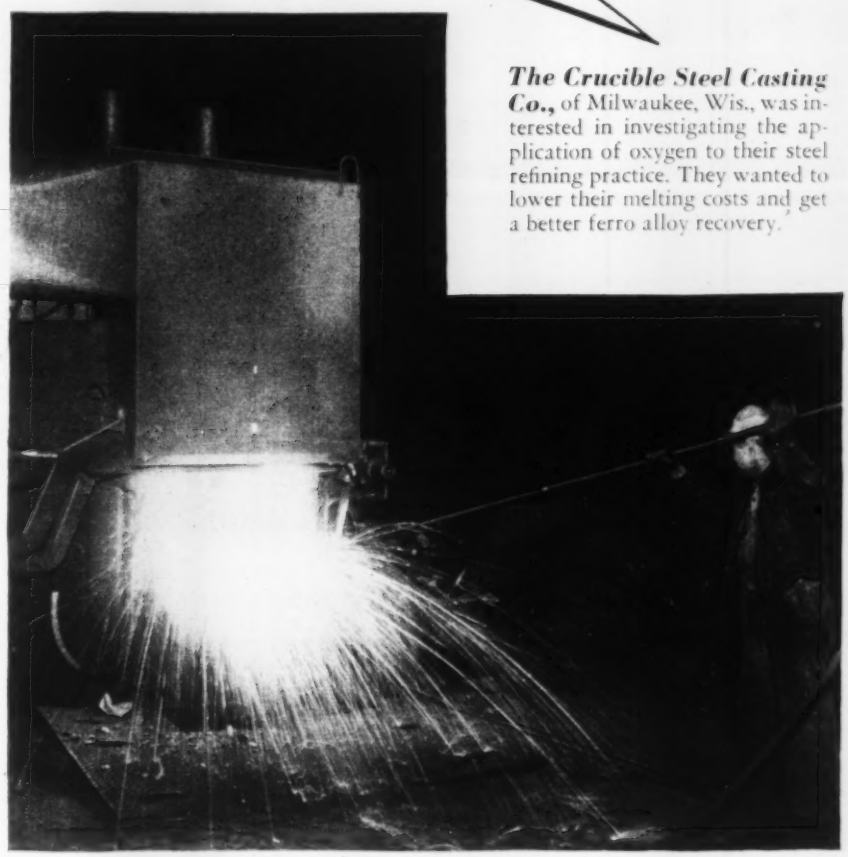

The Crucible Steel Casting Co., of Milwaukee, Wis., was interested in investigating the application of oxygen to their steel refining practice. They wanted to lower their melting costs and get a better ferro alloy recovery.

Clarence Nolan, Airco Technical Sales Supervisor, was called in to demonstrate the use of oxygen in refining acid steel. On his advice, a number of test heats were made in which Airco 99.5% pure oxygen was injected into the molten bath. These tests proved that substantial savings in heat time and power could be realized by adopting this method of refining. When the operation was put in general practice, it was found that in addition to the above savings, it offered better metal analysis control, improved refractory life and further savings through higher recovery of ferro alloys.

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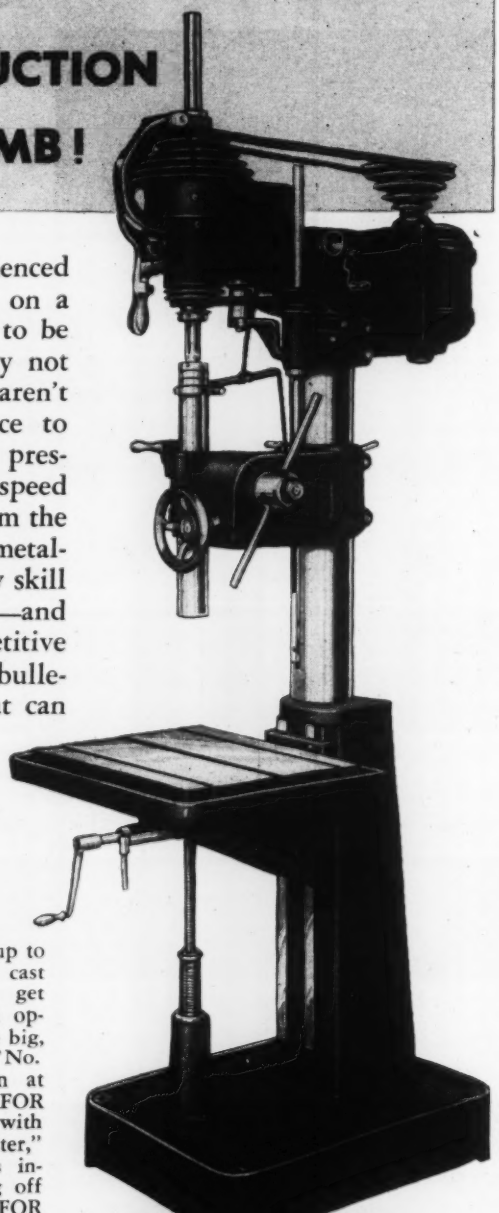

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Alloy Steel . . .

Pittsburgh—Alloy bars are in heavy demand and the pressure for them may become even heavier as a result of recent ordering of trucks for the military services. Producers say demand for alloy is legitimate; to prevent short-lived demand for alloy as a substitute for carbon bars, producers are screening all orders and turning down those where alloy is to be used only as a substitute.

There is speculation as to whether the rationing of nickel by International Nickel Co. will reduce production of nickel-bearing steels or require the reduction of nickel content in them.

Canton, O.—Timken Roller Bearing Co. has increased prices on alloy steel products containing higher-costing nickel. The price advances, ranging from $2 to $20 a ton, were effected by revising extras for alloy content. Effective July 7, prices of nickel bearing tubing were advanced $3 to $8 a ton. This increase followed advances ranging from $3 to $20 a ton on commercial and mechanical tubing and boosts of $2 to $14 a ton on bars, both effective July 1. The advances were necessary, the company said, because of the higher cost of raw materials, particularly nickel.

Tool Steel . . .

Tool Steel Prices, Page 129

Fitchburg, Mass.—Simonds Saw & Steel Co., this city, has increased prices of high-nickel alloy steels, due to the sharp increase in the price of nickel. Advances amount to 4.25 cents a pound on 30 per cent nickel steel, 4.50 cents on 32 per cent grade, 5 cents on 36 per cent, 5.50 cents on 40 per cent, 6 cents on 42 per cent, and 6.25 cents on 45 per cent grade.

Semifinished Steel . . .

Semifinished Prices, Page 127

New York—The leading eastern producer is putting wire rods under allocation beginning with August shipments.

Tungsten Ore . . .

New York—Some sellers of tungsten ore have advanced their prices $1 to $1.50 a ton since the outbreak of the Korean war. As a result the market is now $21.50-$22, net ton unit, duty paid, as against $20-$22 previously.

Tungsten ore inventories in commercial hands are sufficient for normal needs. However, the Korean situation has stimulated buying with a resultant increase in quotations. So far as can be learned, the government is not stockpiling foreign tungsten ores, although it is understood to have substantial quantities of domestic tungsten ore on hand.

Foreign tungsten has been coming in principally from Bolivia, Brazil and South Africa; also, some from Siam. There has been none from China in a considerable time.

Apart from tungsten, foreign ore prices are unchanged for the present. Some doubt if there will be impor-

tant revisions in foreign iron ore or chrome ore for at least thirty days, if then. In any event, traders do not look for sharp advances, unless a world war develops.

Iron Ore . . .

Iron Ore Prices, Page 131

Cleveland—Movement of iron ore from upper lake ports has not fully recovered from the rail strike resulting in a further drop from the 1949 pace. Cumulative shipments for the season to July 10 are 32 per cent below those for the like 1949 period, amounting to 25,128,140 tons against 37,331,439 tons.

Shipments for the week ended July 10 totaled 2,726,050 tons compared with 3,195,150 tons for the like week a year ago. Shipments from United States ports alone amounted to 2,673,271 tons, or at an average daily loading rate of 381,896 tons compared with 3,160,890 tons at a daily rate of 451,556 tons a year ago. The seasonal decrease for United States ports is now 12,329,532 tons on the basis of 24,511,357 tons for the season to July 10.

Shipments for the season, as reported by the Lake Superior Iron Ore Association, this city, are in gross tons:

	Cumulative Total to July 10	
U. S. Ports	1950	1949
Escanaba	1,932,422	1,902,140
Marquette	1,586,123	2,072,347
Ashland	1,663,928	2,390,905
Superior	7,271,078	14,244,638
Duluth	6,087,500	8,306,340
Two Harbors	5,970,306	7,924,519
Total	24,511,357	36,840,889
Canadian		
Michipicoten	241,678	237,588
Port Arthur	375,105	252,962
Total	616,783	490,550
All Ports	25,128,140	37,331,439

Pig Iron . . .

Pig Iron Prices, Page 126

New York—Foundry melt continues restricted by vacations. Hence pig iron consumption is still lagging. Sellers do not look for a return to normal much before September, as some foundries plan mass vacations in August. Nevertheless, the general level for the months of July and August will be higher than originally anticipated for the reason that casting demand is more active in this district than in considerable time.

Buying of foreign iron is featured by the placing of 40,000 tons of basic by the United States Steel Export Co., United States Steel subsidiary, for delivery to the American Steel & Wire Co., Worcester, Mass. This, it is reliably reported, is in addition to 10,000 tons noted several weeks ago as purchased for the same destination.

Philadelphia — Although various plants are curtailing operations this month for vacations, pig iron specifications are heavier than anticipated because of increased demand for castings. Apart from seasonal suspensions, iron foundries are operating five days a week and longer in some instances. Pressure for cast iron pipe is especially strong.

Cincinnati—Foundry iron is moving freely in volume close to recent levels, even though many melters

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NOTE: Machine is now made available to more production within its capacity.

Worm after broaching eight splines on an American vertical pull-down broach.

Hobbing of the worm is performed on a Barber Colman No. 16-16 gear hobbing machine in one pass.

MULTI-PURPOSE CUTTING FLUID SAVES ON MACHINING WORM GEARS

THE FIGURES above speak for themselves. Skilsaw, Inc., noted as being one of the most progressive and cost-conscious manufacturers in the metal-working field, selected Stuart's multi-purpose SpeedKut B for three operations (automatic screw machine, spline broaching, hobbing) on worm gears after placing it in direct competitive tests with other cutting fluids. SpeedKut B is applied straight on the broach while a 6 to 1 dilution is used on the other two operations.

Probably no single element in machining presents as great an opportunity for cost reduction and fuller utilization of the productive time of expensive machine tools as does the cutting fluid used.

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WRITE FOR D. A. Stuart's booklet, "Cutting Fluid Facts" . . . a guide to better machining.

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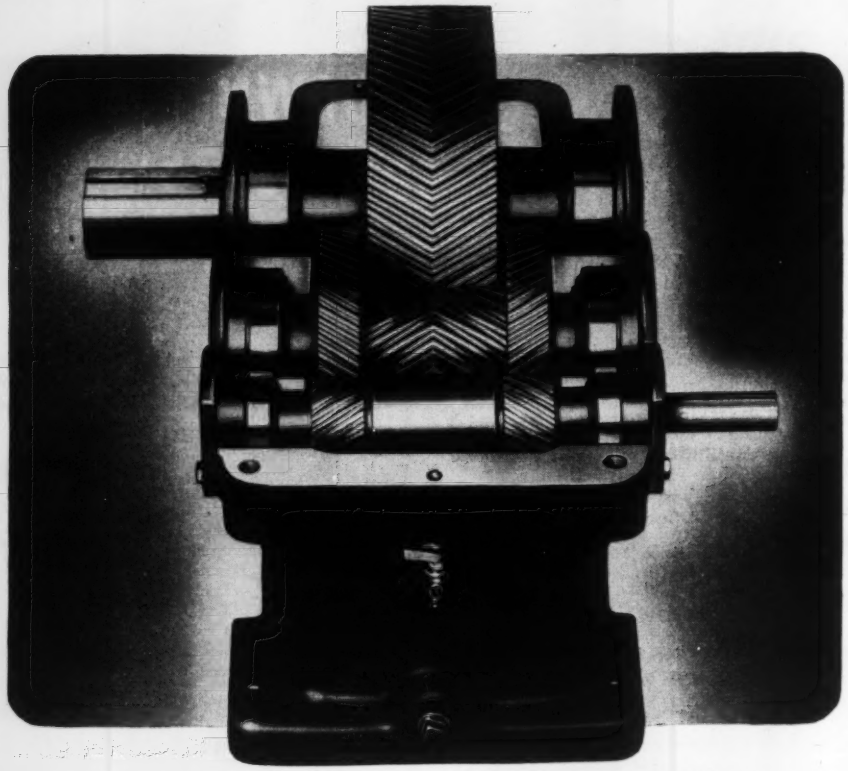

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HERRINGBONE SPEED REDUCERS

by Horsburgh & Scott

● Every Horsburgh & Scott Speed Reducer is designed for 100% momentary overload without injury. Making this possible are such features as: Accurate Sykes type heavier, wide face gears with continuous double helical teeth, giving increased bearing surface . . . finest anti-friction bearings . . . rugged shafts and bearings . . . heavy, ribbed housings . . . close tolerances and rigid inspection. Oversize bearings provide tremendous overhung load capacity on the low-speed shaft. Even under heavy shock loads, here's quiet, smooth operation at its best.

Send note on Company Letterhead for Speed Reducer Catalog 46

THE HORSBURGH & SCOTT CO.

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choose varying periods in July for vacations. Market interests are optimistic over the outlook for August since they expect an upward trend in castings demand.

Los Angeles—Arrival of pig iron from Germany and Belgium has weakened demand for cupola cast. Most foundries are busier—operating at about 60 per cent capacity, a sharp increase over two months ago.

Scrap . . .

Price control talk maybe premature but it's a big factor in lagging sales

Scrap Prices, Page 134

Pittsburgh—Quietness prevailed in the scrap market last week. Although the last sale of No. 1 heavy melting was made at $40, there was a feeling among brokers that if mills were to come into the market they would have to pay $41.

On the basis of railroad scrap sold to Youngstown district mills, brokers' offering prices on No. 1 railroad heavy melting is up 50 cents. All other railroad items are up also.

Rationing of nickel by International Nickel Co. further spurred demand for nickel scrap and nickel-bearing scrap. Some of the less desirable grades have become more attractive to nickel users.

Conversion of industry to war production would not boost demand for scrap, brokers said. Steel mills are already producing at or above capacity and couldn't exceed their present steel output and scrap consumption.

New York—Scrap brokers' buying prices are unchanged, except for a slight reduction in No. 2 bundles to $25-$25.50, f.o.b. shipping point. Consumers are moving cautiously, not wishing to build up heavy inventories in light of possibility that government may eventually impose maximum prices at lower levels.

Philadelphia—Following recent declines, steel scrap prices are leveling off. No changes are noted in the principal open-hearth grades. In the casting grades, charging box and heavy breakable are off to a spread of $34.50-$35; malleable, nominally to $43.

Three cargoes of foreign steel scrap were scheduled to arrive in Baltimore last week for account of the leading eastern producer. Additional shipments are enroute. First shipment of German scrap for Worcester, Mass., is scheduled to arrive early in August against an order for 100,000 tons, noted a few weeks ago.

Cleveland—Undertone of the scrap market here is weaker with prices on the majority of grades easing $1 a ton. Dealers have plentiful supplies and are moving them out of their yards in good volume, retaining on speculation only the better grades. Mills are not placing any large new orders and are insisting on close adherence to specifications in shipments on old contracts. Consensus among traders is that the market may turn bullish next month.

Buffalo—Fear of price controls injected fresh weakness into the scrap

market as about 25,000 tons of steelmaking grades changed hands at price declines of $2 to $2.50 a ton. Purchases were made by the leading mill consumer with three dealers participating in the business. Sales included No. 1 heavy melting at $36.50-$37, No. 2 material at $33-$33.50 and bundles at $31-$31.50. Turnings were not included in the deal as dealers refused to accept a $4 slash in prices which was represented in the mill's offer.

Cincinnati — Scrap prices remain unchanged in a quiet market. Most melters have good supplies and show no inclination to bolster stocks beyond normal. Bids on railroad lists were lower than in June. Foundry needs are spotty, partly due to vacation shutdowns.

Detroit—Despite reports of intensified pressure from steel users for mill tonnage, the scrap market locally is weaker, prices sagging from $1 to $3 a ton. Sales are moderate, mills in general remaining out of the market. One electric furnace plant here is down for two weeks, making for easier prices on busheling and plate scrap. Speculation on the part of mills over the possibility of price controls developing out of the Korean emergency is regarded as completely premature, but it is hinted in some quarters as a contributing factor toward softer scrap quotations. Several foundries are idle for vacation periods and there is little activity in cast grades. Heavy breakable is quoted off $2.

Chicago — Reasonable stability characterizes the scrap market here. No new mill buying of sizable quantities of melting materials appears likely within the foreseeable future. Some additional strength is observed in turnings and borings.

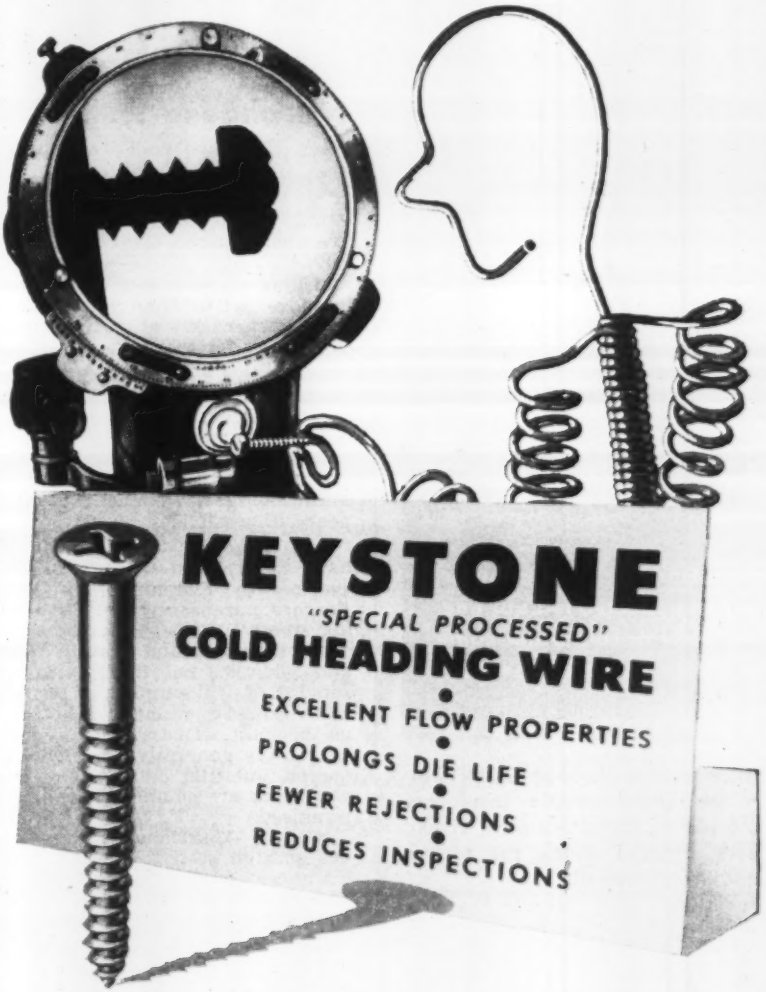
A local mill purchased No. 1 heavy melting at $37-$37.50; No. 2 heavy melting at $35-$35.50, and No. 2 bundles at $29-$30.

St. Louis—Mill scrap buying normally done early in July seems to have been deferred pending a better view of the war's probable effect on prices. Some purchasers are inclined to "sit it out" on inventories, too, for an anticipated further extension of recent softening price trends. No particular stimulus to the market is now foreseen until July vacation periods are over in many of the local heavy industries. Dealers are not overloaded, since shipments have been slow for several weeks. Only mill purchase of consequence last week was less than a month's tonnage of No. 2 melting steel, bought on a $33 basis, unchanged from a week earlier.

Los Angeles—Scrap price trend is indefinite and confusion rules the market. The Korean action accents uncertainty and some dealers anticipate price controls to promote the flow of scrap.

San Francisco—An attempt to reduce scrap steel prices here was short-lived. Mills posted offers $1 below the going prices of $22 for No. 1 heavy melting, but dealers refused to sell and the price level was restored the following day.

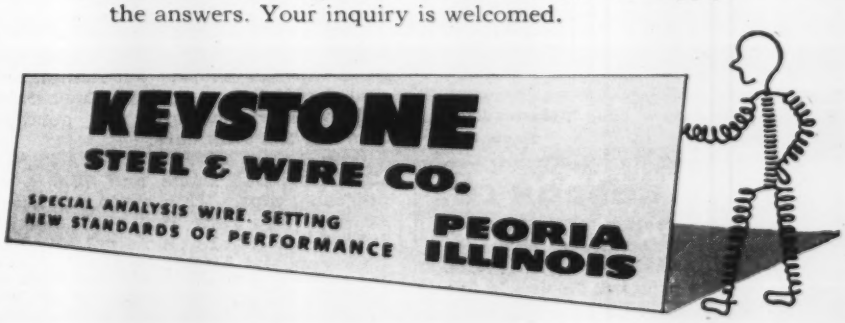
Seattle—Steel scrap is in fair supply at the $2 higher level, but the larger buyers report receipts have not increased in ratio to the new



Production reports prove that Keystone's new "special processed" cold heading wire effects considerable savings in the manufacture of Phillips head, clutch head and cross recessed head screws.

The excellent flow properties of this new wire deliver the desired upsetting and die forming qualities with a high degree of uniformity. Die and plug life are often more than doubled . . . finished product rejections are minimized . . . the cost of expensive final inspection is reduced. The superior plating qualities of "special processed" wire further assure a better finished product.

Regardless of the performance demanded in your wire products, consult Keystone for the materials to meet your most exacting specifications. If special treatment is required, Keystone's metallurgical research and testing facilities are available to supply the answers. Your inquiry is welcomed.



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price schedule. However, there is no actual shortage. Cast iron scrap is also rather tight, the price range being $25 to $30.

Warehouse . . .

Warehouse Prices, Page 131

Philadelphia—Hot-rolled sheets out of warehouses here have advanced $3 to $5 per ton and cold-rolled sheets are up $3 a ton. This action follows advances of $2 a ton on plates, shapes and bars a few weeks ago. Business is more active than anticipated despite suspensions at various consuming plants for mass vacations.

Cincinnati — Ordering from warehouses is active, the demand for sheets, plates, and some other items outstripping supply. Mill shipments have tapered, adding to distributors' attempts to fill needs. Maintaining of balanced stocks appears impossible.

Los Angeles — Some warehouses have experienced a spurt in activity ascribed to "Korean jitters" but fabricators' purchases generally are holding steady. Pressure for steel in this district lags behind that in the East and Midwest, but the gap is closing rapidly. Local supplies of steel, especially rolled sections, are better than in the East. Distributors report Pacific mills generally are maintaining quotas, but that deliveries of eastern producers are smaller than originally promised.

Seattle—Warehouse volume continues at high seasonal levels. In a few instances, buyers are buying speculatively on war fears, but, as a rule, consumers are covering only immediate needs. Hot and cold-rolled sheets are in critical supply, mills refusing to accept orders beyond August. Deliveries of plates and structurals from eastern mills are unsatisfactory. Galvanized sheet supplies are tight.

Rails, Cars . . .

Track Material Prices, Page 129

New York—Railroad demand for steel is increasing. Carriers are buying substantially more tonnage for repairs and some are contemplating purchase of considerable new car equipment. New York Central may construct 4000-5000 additional freight cars at its East Rochester, N. Y. shops. Another large list is tentatively under contemplation by another eastern railroad.

June freight car orders totaled 2195, reports American Railway Car Institute. Of this total, 1670 were placed with commercial shops and 525 with railroad shops.

Deliveries that month totaled 3874 cars against 2193 in May and 9121 in June, 1949.

Of June deliveries, 3165 were from the commercial car builders and 709 from railroad shops. Production included 1840 box cars, 719 hopper cars, 658 refrigerator cars, 537 gondola cars and 112 tank cars.

Backlogs as of July 1 were 23,886 at commercial shops and 16,699 at railroad shops. This made for a total of 40,585 cars against 42,300 on June 1 and 42,813 on July 1, 1949.

Chesapeake & Ohio has closed on a 406-foot steel car ferry to the Christy Corp., Sturgeon Bay, Wis.

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YES...If it's a good fastener!

An ordinary fastener, no matter how cheap, can cost many times as much as a good one in lost assembly time and rejects. A good fastener, uniform, reliable and right for the job, can save its cost many times over.

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Shippers Surmount Difficulties

Cleveland—Despite work stoppages at a number of loading and unloading docks in June, Great Lakes cargo movements for the month totaled 20,459,879 net tons, exceeding the same month a year ago by over 400,000 tons. Total for the season as of July 1 was 45,221,935 net tons, some 14 million tons shy of the 1949 total. The June ore movement at 11,737,923 gross tons fell below 1949's mark of 12,141,068 tons, but coal was 400,000 tons ahead at 5,992,330 tons, and grain nearly half a million tons ahead at 1,321,075 tons. Cumulative tonnages for the season to date, compared with cumulative figures for the same time a year ago, were respectively in net tons: Iron ore, 24,173,156 and 37,144,033; coal, 17,812,754 and 17,986,271; grain, 3,236,025 and 4,196,742.

Gray Iron Founders Contest On

Cleveland—Gray Iron Founders' Society, this city, national trade association of the gray iron founders' industry, is establishing an industry-wide contest to determine the most significant and outstanding example of where foundry engineers have redesigned a part or component for production as a casting in place of some other type of construction. The society's advertising committee will be the judge. Cash prizes are offered for the best and second best examples. The address: 210 National City-E. 6th Bldg., Cleveland.

Oil Burner Sales Growing

Oil burner sales are growing and may surpass the all-time record set in 1947. Current estimates for the year are 850,000 central heating units and more than 1 million space heaters.

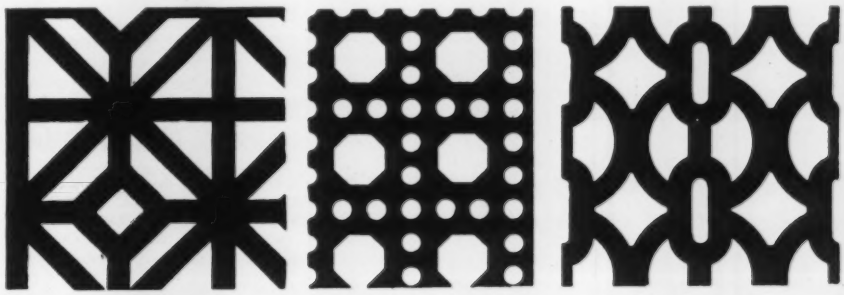
This would represent an increase of nearly 40 per cent over the 614,000 central heating units sold last year.

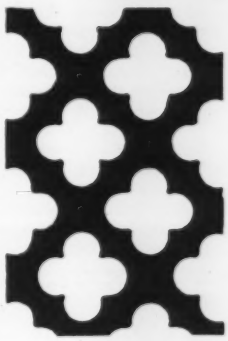
Sales estimates for 1950 have been mounting steadily since the first of the year when the Oil Heat Institute figured this year's sales would be around 670,000 units. If demand continues to expand at the rate of the first six months, the 1950 total may exceed the 888,000 units sold in 1947.

More than half the units now being sold are conversion units for older homes, the OHI reports.

Canada . . .

Toronto, Ont.—While iron and steel production in Canada during May exceeded the rate of the month immediately preceding, it was slightly below the corresponding month of 1949. For May this year, blast furnaces produced 195,893 tons of pig iron for a daily average of 84 per cent of rated capacity and compares with 82.1 per cent in April and 86.7 per cent in May, 1949. Output for the month under review included 146,785 tons of basic iron; 22,489 tons of





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Hendrick offers a wide variety of decorative patterns in light weight perforated metal, for radiator enclosures, stove panels, kitchen cabinets, and similar applications.

Regularly furnished in steel sheets of available stock size, in gauges from 16 to 22. These patterns can also be supplied in other metals on special order. Write for full information.

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foundry iron and 26,619 tons of malleable iron.

Ferroalloys produced in May amounted to 12,707 net tons and included ferrosilicon, silicomanganese, ferromanganese, ferrochrome and ferrophosphorus.

Production of steel ingots and castings in May totaled 290,906 net tons for daily average of 85.6 per cent, against a rate of 84.9 per cent in April and 86.3 per cent in May, 1949. Output for May this year included 283,810 tons of steel ingots and 7096 tons of steel castings.

Following are comparative production figures in net tons:

	Steel Ingots Castings	Pig Iron	Ferro-alloys
May, 1950	290,906	195,893	12,707
April, 1950 ...	279,320	185,259	14,627
May, 1949	293,179	202,148	20,652
5 Mos., 1950..	1,412,601	903,728	64,104
5 Mos., 1949..	1,405,586	940,816	111,180
5 Mos., 1948..	1,336,231	847,930	76,151

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

7650 tons, bakery, National Biscuit Co., Chicago, to American Bridge Co., Pittsburgh.

6400 tons, Major Deegan State Highway, 50-2, Bronx, New York, to Bethlehem Steel Co.

6000 tons, transmission tower steel for Bonneville Power Administration, to Creamer & Dunlap, Tulsa, Okla., low $661,114. (Previously reported to unnamed fabricator.)

2750 tons, bottling plant, Anheuser-Busch Inc., Newark, through George A. Fuller Co., New York, to American Bridge Co., Pittsburgh.

1900 tons, contract No. 33, New Jersey Turnpike, Gloucester, Camden and Burlington counties, through F. A. Canuso & Son, Camden, N. J., to Ralph Cornell Inc. with fabrication by Belmont Iron Works, Eddystone, Pa.

1572 tons, Bugs Island power house, Antlers, Va., to Ingalls Iron Works Co., Birmingham.

1435 tons, factory building, American Cyanamid Co., Pearl River, N. Y., to Bethlehem Steel Co.

1400 tons, trash racks for Bureau of Reclamation, including 1030 tons in spec. 3041, Coram, Mont., and 370 tons in spec. 3042, Louisville, Mont., to A. Gunthard Co.

1090 tons, Memorial Library, University of Wisconsin, Madison, Wis., to American Bridge Co., Pittsburgh.

1000 tons, plant additions to Crown-Zellerbach paper plants at Camas, Wash., and West Linn, Oreg., to Pacific Car & Foundry Co., Seattle.

765 tons, factory building, H. Rosen, Hicksville, N. Y., to American Bridge Co., Pittsburgh.

715 tons, terminal, United Fruit Co., Weehawken, N. J., to American Bridge Co., Pittsburgh.

600 tons, office building, Northern Natural Gas Co., Omaha, Nebr., to Paxton & Vierling Iron Works, East Omaha, Nebr.

525 tons, Columbia Memorial Hospital, Hudson, N. Y., to Harris Structural Steel Co., New York.

500 tons, power house, Claymont, Del., to Frank M. Weaver & Co., Lansdale, Pa.

387 tons, state bridge, Essex and Passaic counties, New Jersey, to Phoenix Bridge Co., Phoenixville, Pa.

364 tons, Bodner building, Indianapolis, to Central States Bridge & Structural Co., Indianapolis.

300 tons, building, R. Cooper Jr., Chicago, to American Bridge Co., Pittsburgh.

300 tons, hospital, Stamford, Conn., to Portchester Iron Works, Port Chester, N. Y.

290 tons, state bridge, New York, to Bethlehem Steel Co.

282 tons, bridge, proj. U-075-1(1), Manitowoc, Wis., to Worden-Allen Co., Milwaukee.

280 tons, warehouse, Michael Flynn Mfg. Corp., Philadelphia, to Max Corchin, that city.

270 tons, health center, Jamaica, N. Y., to Elizabeth Iron Works, Elizabeth, N. J.

250 tons, plant addition, Ciba Inc., Toms River, N. J., to Belmont Iron Works, Eddystone, Pa.

250 tons, substructure, Congress street bascule bridge, Chicago, to American Bridge Co., Pittsburgh.

232 tons, fertilizer plant addition, Swift & Co., E. St. Louis, Ill., to Mississippi Valley Structural Steel Co., Decatur, Ill.

212 tons, addition to service station, Electro-Motive Division, General Motors Corp., Baltimore, to Dietrich Bros. Inc., Baltimore.

200 tons, Spokane & Eastern bank building, Spokane, Wash., to Independent Iron Works, Oakland, Cal.

195 tons, store, W. T. Grant, Johnstown, Pa., through William T. Linker, Philadelphia, to Griffith-Custer Steel Co., Johnstown, Pa.

195 tons, addition, Misericordia Hospital, Philadelphia, through John McShain Inc., that city, to Belmont Iron Works, Eddystone, Pa.

187 tons, stockhouse, Drewrys Ltd., South Bend, Ind., to Elkhart Bridge & Iron Co., Elkhart, Ind.

180 tons, ring gate, Bureau of Reclamation, spec. 3024, Coram, Mont., to Puget Sound Bridge & Dredging Co.

150 tons, 324-foot Montana State bridge, to Bethlehem Pacific Coast Steel Corp., Seattle; general contract to Engineering Construction Co., Helena, Mont., low $127,289.

125 tons, S. S. Kresge store, Gary, Ind., to American Bridge Co., Pittsburgh; Marcello Geremetta Co., Gary, contractor.

STRUCTURAL STEEL PENDING

3550 tons, contract No. 54, New Jersey Turnpike, Hudson county, Peerless Construction Co., New York, low bidder; work also involves 737 tons of reinforcing bars, 5180 ft of steel piles and 2725 ft of metal railing.

2695 tons, state bridges for construction in Jefferson, Schuylkill, Venango and York counties, Pennsylvania; bids July 28.

2500 tons, Veterans' Hospital, Oklahoma City, Okla.; bids July 25.

1200 tons, state bridge, Lancaster county, Pennsylvania, through H. J. Williams, York, Pa., to John Wickersham, Lancaster, Pa., for erection and subletting of fabrication contract.

655 tons, school No. 192, Manhattan, N. Y., Caristo Contracting Co., that city, low on general contract.

600 tons, building, Powers Regulator Co., Skokie, Ill.; bids in.

600 tons, naval air turbine laboratory, Trenton, N. J.; general contract to Eastern Construction Co., that city; approximately 750 tons of large fabricated pipe also required.

500 tons, YMCA building, Decatur, Ill.; bids July 11.

460 tons, bridge, Cont. 3233, State of Indiana, E. Chicago, Ind.; bids June 29.

458 tons, bridge, sec. 7-RB-F, Silvas, Rock Island county, Ill.; bids June 27.

290 tons, Foster avenue, bridge, Chicago.

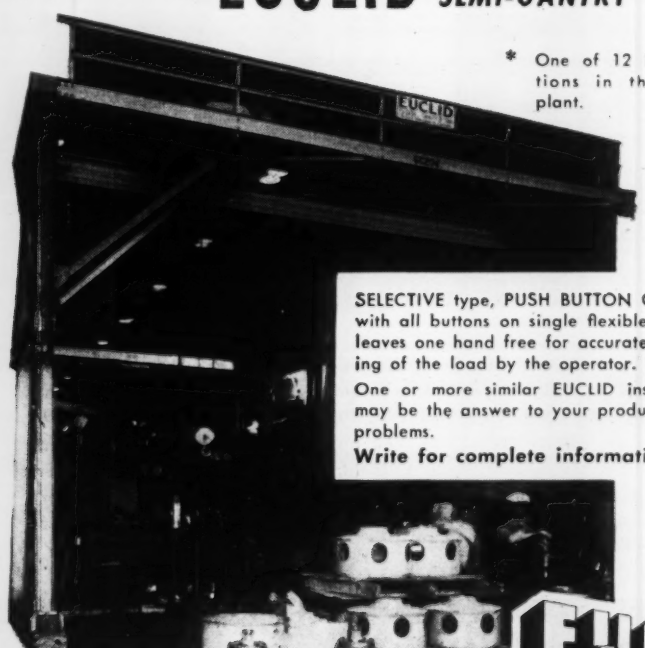
Unstated tonnage, state bridge work, estimated to cost $4 million, Cayuga county, New York; bids Aug. 2.

Unstated tonnage, Van Wyck State Expressway, Queens, N. Y.; bids Aug 2; estimated cost $4,370,000.

Unstated, Juniper Canyon and Spring Gulch bridges, railway relocation project, McNary dam; general contract to Utah Construction Co., Richmond, Cal., low $242,079, by U. S. Engineer, Walla Walla, Wash.

Unstated, steel roof decking and miscellane-

ASSEMBLY LINE "SPEED UP" ACCOMPLISHED
WITH THE AID OF THE EUCLID 3 TON SEMI-GANTRY* CRANE



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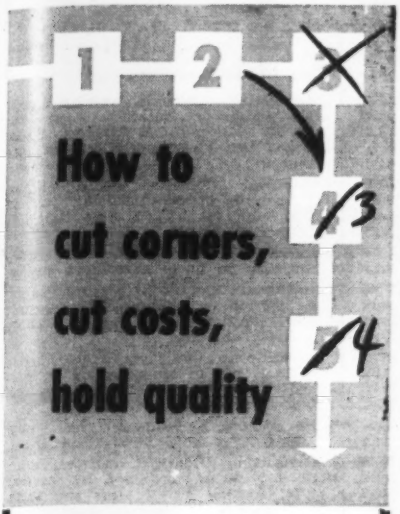

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3. Eliminates Pickle A maker of radio transmitters (using Oakite Compound No. 33 to remove rust and oil at same time) reports: "No longer necessary to pickle the steel."

FREE Write Oakite Products, Inc., 34E Thames St., New York 6, N. Y., for the new 44-page booklet *"Some good things to know about Metal Cleaning"*. Among the subjects are:

Machine cleaning	**Tank cleaning**
Electrocleaning	**Pickling**
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ous items; bids to Bureau of Reclamation, Denver, July 25; Hungry Horse dam project.

Unstated, superstructure seven railroad bridges, 18-mile relocation project, Trenton dam, Nebraska; bids to Bureau of Reclamation, Denver, Aug. 9.

REINFORCING BARS . . .

REINFORCING BARS PLACED

525 tons, NACA equipment and storage building, Cleveland, to Patterson-Leitch Co., this city.

494 tons, research building, Mt. Sinai Hospital, Chicago, to Joseph T. Ryerson & Son Inc., Chicago.

375 tons, building, Cornell Wood Products Co., Milwaukee, to Bethlehem Steel Co.

225 tons, Potholes East canal, Columbia Basin, to Bethlehem Pacific Coast Steel Co., Seattle; Scheumann & Johnson, Seattle, general contractor.

218 tons, St. Peter's church, Chicago, to Joseph T. Ryerson & Son Inc., Chicago.

215 tons, apartment building for Alcon Corp., Chicago, to Ceco Steel Products Corp., Cicero, Ill.

200 tons, senior high school, Chehalis, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; Sellen Construction Co., Seattle, general contractor.

176 tons, elementary school, 2710 S. Dearborn St., Chicago, to Ceco Steel Products Corp., Cicero, Ill.

166 tons, Air Corps field construction, Eielson Field, Alaska; Safeway store, Seattle; and state bridge, Montana, to Bethlehem Pacific Coast Steel Corp., Seattle.

150 tons, Spokane river bridge, Spokane, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle; State Construction Co., Seattle, general contractor.

REINFORCING BARS PENDING

1500 tons, St. Anthony Falls lock and dam, Minneapolis.

493 tons, auxiliary outlet sewer 2A, Chicago; bids in.

380 tons, building, Hummell & Downing Co., Milwaukee.

346 tons, Memorial library, University of Wisconsin, Madison, Wis.; bids June 23.

226 tons, Miller Hospital, St. Paul; bids June 30.

220 tons, warehouse and office building, American Brass Co., Chicago; bids July 10.

200 tons, Washington state highway projects; general contracts to Erickson Paving Co., Seattle, and Dooley Construction Co., Seattle.

195 tons, apartment, S. Everett street, Chicago.

195 tons, Foster avenue bridge, Chicago.

123 tons, faculty housing project, University of Chicago, Chicago; bids July 6.

120 tons, also 113 tons steel joist, YMCA building, Decatur, Ill.; bids June 11.

116 tons, South Junior High School, Elgin, Ill.; bids July 10.

116 tons, alterations to east cell house, state penitentiary, Joliet, Ill.; bids June 27.

100 tons, building, Illinois Bell Telephone Co., Moline, Ill.; bids June 19.

100 tons, extensions to Diablo dam, Seattle light department; award to Morrison-Knudsen Co., Seattle, low $2,000,844.

100 tons, replacement West Spokane street bridge, Seattle; general contract to Manson Construction & Engineering Co., Seattle, low $70,194.

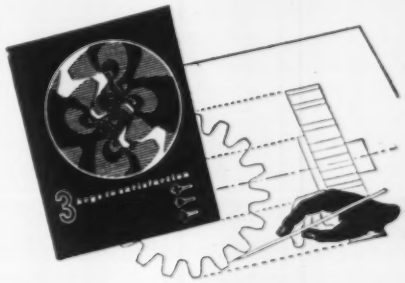
PIPE . . .

STEEL PIPE PLACED

1050 tons, 36 and 48-in. for Metropolitan Utilities District, Omaha, Nebr., to American Locomotive Co., New York.

CAST IRON PIPE PLACED

100 tons, 12 in., Auburn, Wash., system ex-



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To assist designers we have prepared a 100 pp book "Three Keys to Satisfaction" in which the bearing of each factor on production of machine parts is discussed. The conclusion is drawn that, of the three, Design is the most important factor.

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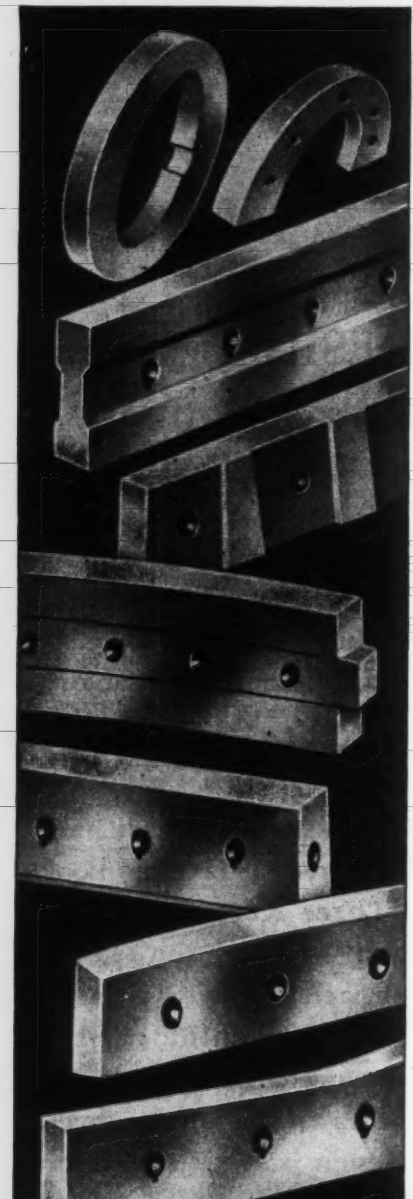


tension, to E. N. Hallgren Co., Seattle, for American Cast Iron Pipe Co., Birmingham; State Construction Co., Seattle, general contractor.

CAST IRON PIPE PENDING

450 tons, various dimensions; bids in to Portland, Oreg., July 6.

200 tons, bids to Everett, Wash., July 14.

75 tons, 5400 feet 6 in., King county water district No. 42; general contract to Superior Construction Co., Seattle.

PLATES . . .

PLATES PLACED

280 tons, tanks, Delaware Power & Light Co., Edgemoor, Del., to Bethlehem Steel Co.

PLATES PENDING

Unstated, half million gallon tank, Hazelwood Water district, Portland, Oreg.; bids July 18; John W. Cunningham, Portland, engineer.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Royal State Railway, Thailand, 45 meter-gage, diesel-electric locomotives, to Davenport Besler Corp., Davenport, Iowa.

RAILROAD CARS PLACED

Gulf, Mobile & Ohio, 200 automobile box cars, to the American Car & Foundry Co., New York; railroad has also placed 100 cast steel frames and ends for work under construction in its own shops to the General Steel Castings Corp., Eddystone, Pa.

Virginian, 500 fifty-five ton hopper cars, to own shops at Princeton, W. Va.; to be completed this year at estimated cost of $2 million.

Warren Maritime Corp., 200 all-welded tank cars, to American Car & Foundry Co., New York; the cars will be of 11,000-gal capacity each, designed for the transportation of liquefied petroleum gases; construction will be at ACF's Milton, Pa., plant.

RAILROAD CARS PENDING

Chesapeake & Ohio, 1070-ton hopper cars and 1050-ton box cars; bids closed.

New York Central, 4000-5000 box cars, hoppers and gondolas, contemplated for construction in the railroad's Merchants Dispatch Shops, East Rochester, N. Y.

FERROALLOYS

(*Continued from Page 131*)

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., 8MxD, bulk, 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1¢, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lots 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 20.50c per lb of contained chromium plus 11.30c per pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus 11.50c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract carload, 1" x D; packed, max 0.50% C grade, $1.03 per lb of contained chromium, ton lot $1.05, less ton $1.07. Delivered. Spot, add 5c.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 17.00c per lb of contained Si; packed 18.40c; ton lot 19.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon. Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15.0c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 19.0c per lb of Si, c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 7.65c per lb of alloy, ton lots packed 9.05c, 200 to 1999 lb 9.40c, smaller lots 9.90c. Delivered. Spot up 0.5c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c, ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lots 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained. F.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%.) Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $167 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C

3-4.5%.) Contract, $183 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.). Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c. **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.10.

Grainal: Vanadium Grainal No. 1, 93c per lb; No. 6, 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

Zirconium Alloys

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c, F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., frt allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $3.50 per lb of contained Cb, less ton $3.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min. C 0.30 max.) ton lots, 2" x D, $2.67 per lb of contained Cb plus Ta, delivered; less ton lots $2.72.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%; Zr 0.75-1.25%, C 3.50-5%). 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.50c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.0c per lb of alloy; ton lots 18.0c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

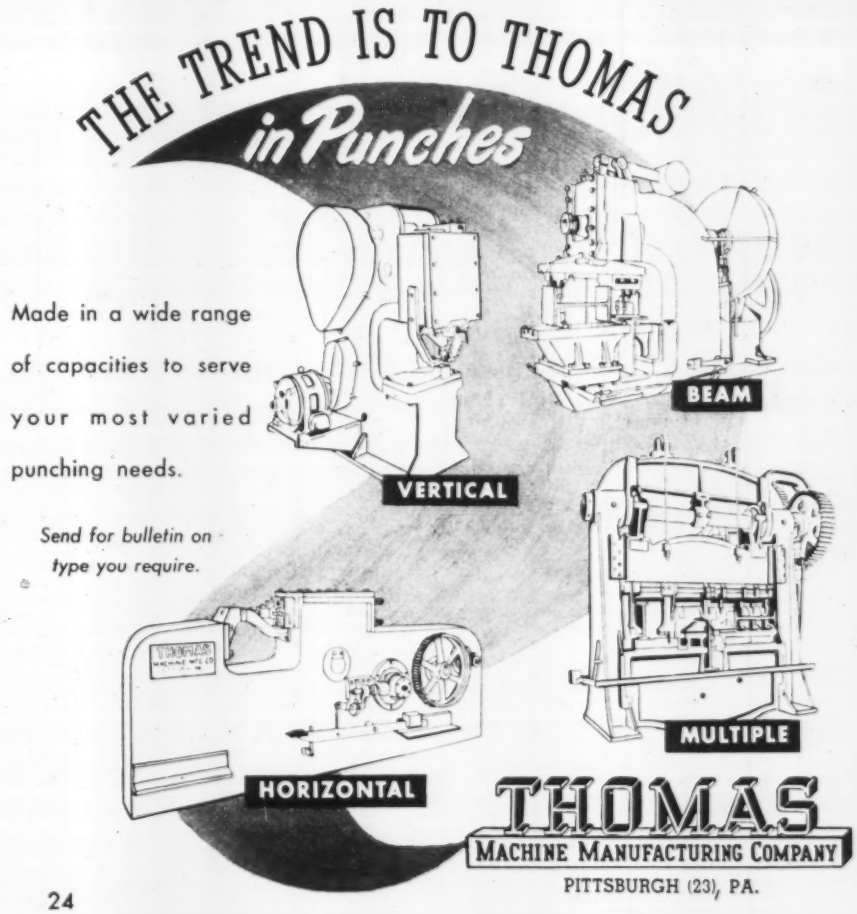
V-3 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum 95.00c.



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Metalworking Briefs

CONSTRUCTION, ENTERPRISE ORGANIZATIONAL CHANGES

California

American Brake Shoe Co.'s **American Manganese Steel Division** started a $300,000 expansion at its plant in Oakland, Calif. A new one-story building will house new sand preparing and handling equipment for molding operations. The structure is being built by Ragnar Benson Co., Chicago. Completion is scheduled for Dec. 1.

California

American Can Co., New York, plans to construct a plant in the Wilmington district of Los Angeles. The plant will cost several million dollars and is expected to be in full operation by the middle of 1951. It will be the company's ninth California plant.

Delaware

Facit Inc.—machinery—filed a charter of incorporation with the secretary of state's office at Dover, Del. Capital of the firm is listed at $500,000. U. S. Corporation Co., Dover, is serving as the principal office.

Illinois

Hypro-Tool Co., New Bedford, Mass., appointed Arthur B. Hegan & Associates, Chicago, as a direct factory representative. A stock of high-speed taps will be maintained at 3851 N. Hoyne Ave., that city.

Illinois

Culligan Zeolite Co., Northbrook, Ill., is erecting a soft water service plant in that city at an estimated cost of $500,000. Engineering Systems, Chicago, is the architect.

Illinois

Skilsaw Inc. is building the 11th addition since 1938 to its portable electric and pneumatic tool plant at 5033 Elston Ave., Chicago. Construction cost is estimated at $500,000.

Illinois

Construction has started on a $600,000 plant for **Bloomfield Industries Inc.** at 4546 W. 47th St., Chicago. The building will be used for offices and for producing stainless steel, aluminum and molded plastic products. The company expects to move into the new building late in October.

Indiana

Swift Electric Welder Co., Detroit, appointed Indianapolis Machinery & Supply Co., Indianapolis, as distributor of the company's products in Indiana and southern Illinois.

Indiana

Construction was started at Lawrenceburg, Ind., for the bottle making plant of the **Thatcher Glass Mfg. Co. Inc.**, Elmira, N. Y. Representing an investment of $1,750,000, the plant will consist of the principal production and furnace building, warehouse for finished products, mould and maintenance shop, compressor building, pump house and miscellaneous units. It is scheduled to be completed in November.

Louisiana

David J. Joseph Co., Ashland, Ky., broker in iron and steel scrap and nonferrous metals, opened an office at 31 International Trade Mart Bldg., New Orleans 12. Mr. Mayo Fechheimer is manager of the new office.

Michigan

Arthur B. Sonneborn Co. moved its Flint, Mich., offices to 314 Paterson Bldg., that city. Sonneborn is the Michigan and northwestern Ohio representative of National Electric Welding Machines Co., Bay City, Mich.

Michigan

Manufacturing operations of **Sager-Barrows Lock Works,** North Chicago, and **Norton Door Closer Co.,** Chicago, divisions of Yale & Towne Mfg. Co., Stamford, Conn., will be consolidated in a new single-story plant at Berrien Springs, Mich. The Berrien Springs factory was purchased June 20 from Clark Equipment Co., Buchanan, Mich. The Sager-Barrows and Norton plants in North Chicago and Chicago, respectively, will be sold.

Michigan

All sales of Calumet & Hecla Consolidated Copper Co.'s **Wolverine Tube Division** are being handled through its new divisional sales and advertising offices at 1850 Guardian Bldg., Detroit 26. Sales to wholesalers continue to be handled by the company's Detroit plant sales department at 1411 Central Ave., Detroit 9.

Michigan

Gerity-Michigan Corp., Adrian, Mich., will start construction soon on an addition to its Beecher street plant in that city. Estimated cost is $350,000.

Missouri

Automatic Transportation Co., Chicago, manufacturer of electric industrial trucks, appointed Inter-State Industrial Equipment Co. as its representative in Kansas City, Mo. The newly organized firm is headed by Earl R. Calvin, formerly manager of Industrial Truck Division, Mason W. Haigh & Sons, Peoria, Ill.

New Jersey

Metalsmiths Division, Orange Roller Bearing Co. Inc., Orange, N. J., announced a complete engineering and fabricating service covering stainless steel endless belts for conveyors.

New York

Services Steel Co., Detroit, purchased the stock and equipment of the Buffalo warehouse of Edgar T. Ward's Sons Co. at 39 River St.

New York

Machinery Builders Inc. moved its general offices and plant to 475 Grand Concourse, Bronx 51, New York. Shipping and receiving department is located at 500 Walton Ave., Bronx 51.

New York

National Broach & Machine Co., Detroit, appointed Triplex Machine Tool Corp., World-Telegram Bldg., New York, as sales representative for all domestic business in that territory. John Cetrule is sales manager of Triplex. F. P. Harrigan, Newark, N. J., will continue as representative on all export sales in the New York area.

New York

Consolidated Edison Co., New York, will build a station in Astoria, Queens, N. Y., to house the world's largest reheat boiler and other equipment for generating electricity. The first unit installed will cost $25 million. It is the first new station to be

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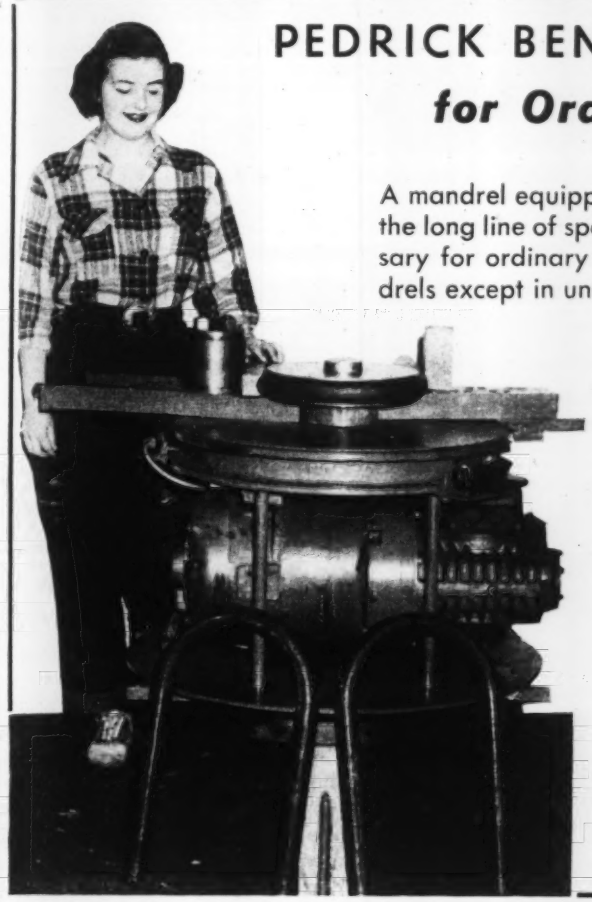

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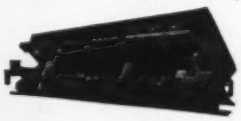

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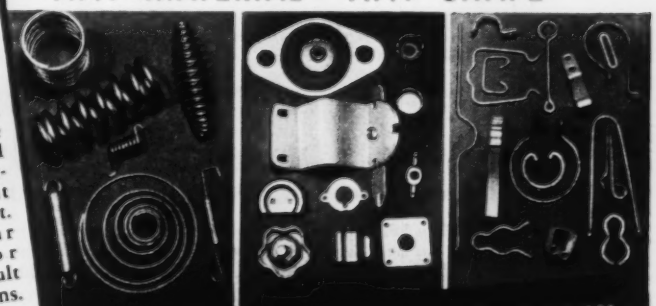

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